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for doctors and their patients

e Official Journal of the NORTH CAROLINA MEDICAL SOCIETY July 1983, Volume 44, No. 7

Alzheimer's Disease by Lisa Gwyther

What is it? Who gets it? What can be done to help the victims and their families in North Carolina? . . . . page 435

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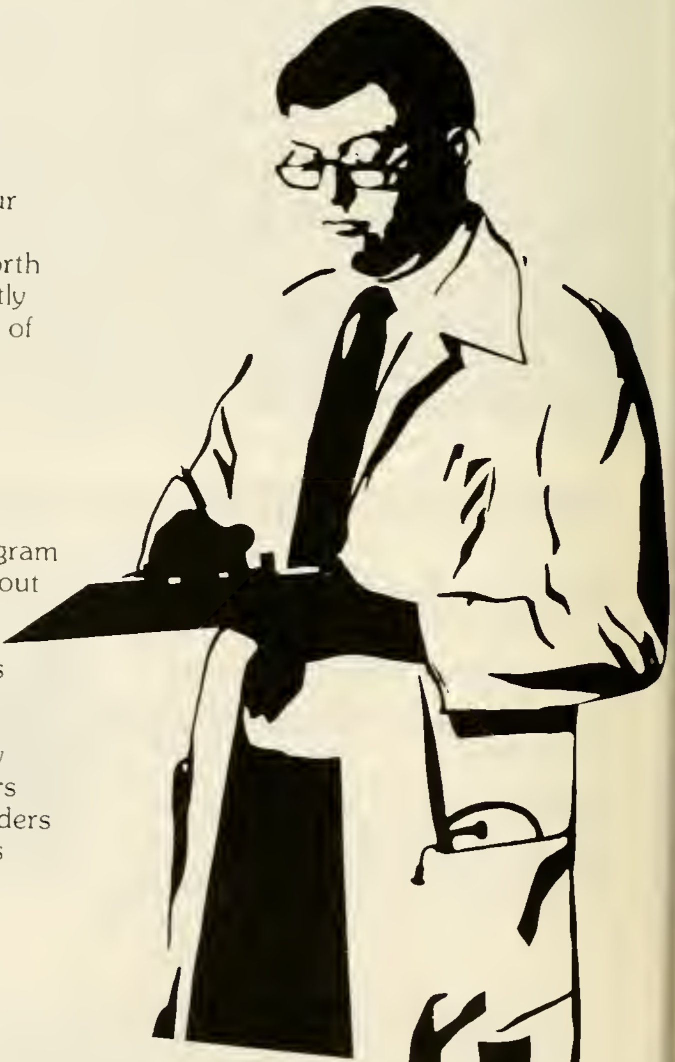

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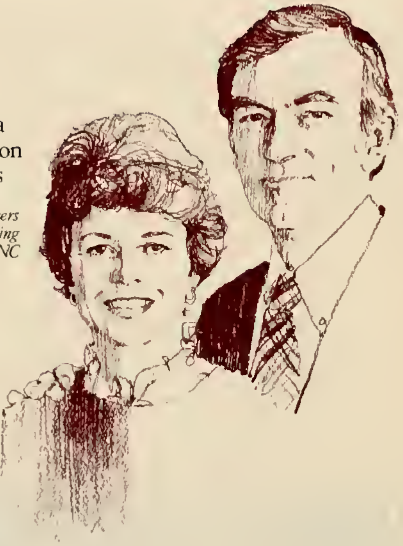

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1. Stone PH, Turi ZG, Muller JE: Efficacy of nifedipine therapy for refractory angina pectoris. *Am Heart J* 104:672-681, September 1982.
2. Antman E, Muller J, Goldberg S, et al: Nifedipine therapy for coronary-artery spasm: Experience in 127 patients. *N Engl J Med* 302:1269-1273, June 5, 1980.

BRIEF SUMMARY
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II. Chronic Stable Angina (Classical Effort-Associated Angina): PROCARDIA is indicated for the management of chronic stable angina (effort-associated angina) without evidence of vasospasm in patients who remain symptomatic despite adequate doses of beta blockers and/or organic nitrates or who cannot tolerate those agents.

In chronic stable angina (effort-associated angina) PROCARDIA has been effective in controlled trials of up to eight weeks duration in reducing angina frequency and increasing exercise tolerance, but confirmation of sustained effectiveness and evaluation of long-term safety in those patients are incomplete.

Controlled studies in small numbers of patients suggest concomitant use of PROCARDIA and beta blocking agents may be beneficial in patients with chronic stable angina, but available information is not sufficient to predict with confidence the effects of concurrent treatment, especially in patients with compromised left ventricular function or cardiac conduction abnormalities. When introducing such concomitant therapy, care must be taken to monitor blood pressure closely since severe hypotension can occur from the combined effects of the drugs. (See Warnings.)

CONTRAINDICATIONS: Known hypersensitivity reaction to PROCARDIA.

WARNINGS: Excessive Hypotension: Although in most patients, the hypotensive effect of PROCARDIA is modest and well tolerated, occasional patients have had excessive and poorly tolerated hypotension. These responses have usually occurred during initial titration or at the time of subsequent upward dosage adjustment, and may be more likely in patients on concomitant beta blockers.

Severe hypotension and/or increased fluid volume requirements have been reported in patients receiving PROCARDIA together with a beta blocking agent who underwent coronary artery bypass surgery using high dose fentanyl anesthesia. The interaction with high dose fentanyl appears to be due to the combination of PROCARDIA and a beta blocker, but the possibility that it may occur with PROCARDIA alone, with low doses of fentanyl, in other surgical procedures, or with other narcotic analgesics cannot be ruled out. In PROCARDIA treated patients where surgery using high dose fentanyl anesthesia is contemplated, the physician should be aware of these potential problems and, if the patient's condition permits, sufficient time (at least 36 hours) should be allowed for PROCARDIA to be washed out of the body prior to surgery.

Increased Angina: Occasional patients have developed well documented increased frequency, duration or severity of angina on starting PROCARDIA or at the time of dosage increases. The mechanism of this response is not established but could result from decreased coronary perfusion associated with decreased diastolic pressure with increased heart rate, or from increased demand resulting from increased heart rate alone.

Beta Blocker Withdrawal: Patients recently withdrawn from beta blockers may develop a withdrawal syndrome with increased angina, probably related to increased sensitivity to catecholamines. Initiation of PROCARDIA treatment will not prevent this occurrence and might be expected to exacerbate it by provoking reflex catecholamine release. There have been occasional reports of increased angina in a setting of beta blocker withdrawal and PROCARDIA initiation. It is important to taper beta blockers if possible, rather than stopping them abruptly before beginning PROCARDIA.

Congestive Heart Failure: Rarely, patients, usually receiving a beta blocker, have developed heart failure after beginning PROCARDIA. Patients with tight aortic stenosis may be at greater risk for such an event.

PRECAUTIONS: General: Hypotension: Because PROCARDIA decreases peripheral vascular resistance, careful monitoring of blood pressure during the initial administration and titration of PROCARDIA is suggested. Close observation is especially recommended for patients already taking medications that are known to lower blood pressure. (See Warnings.)

Peripheral edema: Mild to moderate peripheral edema, typically associated with arterial vasodilation and not due to left ventricular dysfunction, occurs in about one in ten patients treated with PROCARDIA. This edema occurs primarily in the lower extremities and usually responds to diuretic therapy. With patients whose angina is complicated by congestive heart failure, care should be taken to differentiate this peripheral edema from the effects of increasing left ventricular dysfunction.

Drug interactions: Beta-adrenergic blocking agents: (See Indications and Warnings.) Experience in over 1400 patients in a non-comparative clinical trial has shown that concomitant administration of PROCARDIA and beta-blocking agents is usually well tolerated, but there have been occasional literature reports suggesting that the combination may increase the likelihood of congestive heart failure, severe hypotension or exacerbation of angina.

Long-acting nitrates: PROCARDIA may be safely co-administered with nitrates, but there have been no controlled studies to evaluate the antianginal effectiveness of this combination.

Digitalis: Administration of PROCARDIA with digoxin increased digoxin levels in nine of twelve normal volunteers. The average increase was 45%. Another investigator found no increase in digoxin levels in thirteen patients with coronary artery disease. In an uncontrolled study of over two hundred patients with congestive heart failure during which digoxin blood levels were not measured, digitalis toxicity was not observed. Since there have been isolated reports of patients with elevated digoxin levels, it is recommended that digoxin levels be monitored when initiating, adjusting, and discontinuing PROCARDIA to avoid possible over- or under-digitalization.

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ADVERSE REACTIONS: The most common adverse events include dizziness or light-headedness, peripheral edema, nausea, weakness, headache and flushing each occurring in about 10% of patients, transient hypotension in about 5%, palpitation in about 2% and syncope in about 0.5%. Syncopal episodes did not recur with reduction in the dose of PROCARDIA or concomitant antianginal medication. Additionally, the following have been reported: muscle cramps, nervousness, dyspnea, nasal and chest congestion, diarrhea, constipation, inflammation, joint stiffness, shakiness, sleep disturbances, blurred vision, difficulties in balance, dermatitis, pruritus, urticaria, fever, sweating, chills, and sexual difficulties. Very rarely, introduction of PROCARDIA therapy was associated with an increase in anginal pain, possibly due to associated hypotension.

In addition, more serious adverse events were observed, not readily distinguishable from the natural history of the disease in these patients. It remains possible, however, that some or many of these events were drug related. Myocardial infarction occurred in about 4% of patients and congestive heart failure or pulmonary edema in about 2%. Ventricular arrhythmias or conduction disturbances each occurred in fewer than 0.5% of patients.

Laboratory Tests: Rare, mild to moderate, transient elevations of enzymes such as alkaline phosphatase, CPK, LDH, SGOT, and SGPT have been noted, and a single incident of significantly elevated transaminases and alkaline phosphatase was seen in a patient with a history of gall bladder disease after about eleven months of nifedipine therapy. The relationship to PROCARDIA therapy is uncertain. These laboratory abnormalities have rarely been associated with clinical symptoms. Cholestasis, possibly due to PROCARDIA therapy, has been reported twice in the extensive world literature.

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EDITORIAL

Diagnosis and Treatment of the Painful Episode in Sickle Cell Disease

Wendell Rosse, M.D.

The most common and disabling complication of sickle cell disease is the painful episode, often called the painful crisis. It is characterized by the onset, usually fairly rapid, of pain in the bones of the axial skeleton and limbs. In particular, the long bones, ribs, and the vertebrae are the most commonly affected although the small bones of the hands, the flat bones of the face and head, or the pelvis may be affected. Although the episode usually begins with pain in one site, characteristically more than one area is involved in a clinically significant painful episode.

The cause of the pain can be explained by the curious circulation within the bones. Arterial blood enters the bone through the nutrient canal and breaks up into arterioles and capillaries within the cortical bone. After leaving the cortex, the blood empties into venous sinuses which are present in profusion in the medullary bone. These sinuses form the venous channels which then empty into the venous system. As cells containing hemoglobin S, the sickle cell hemoglobin, pass through this circulation, they lose oxygen and the cells sickle. If this occurs in sufficiently small vessels, the cells "logjam," causing obstruction to flow. Usually, sickling does not occur until the cells have reached the venous circulation in which case the sickling of the cells does not cause an obstruction to flow. However, if the flow becomes slowed, sickling occurs within the medullary cavity, resulting in obstruction and anoxia. Anoxia evokes pain from the endosteum, a structure particularly rich in pain fibers.

Patients with sickle cell disease probably have some degree of pain every day; most patients learn to ignore this pain. The cause of the clinically significant painful episode is seldom apparent although it must have some generalized effect upon the blood or circulation. Frequently, it occurs during infections, leading to the suspicion that acute phase reactants which accompany infections may play some role in the genesis of the episode. Changes in weather, emotional upset and changes in activity have all been suspected but not proven to be antecedents of the painful crisis.

Most patients with sickle cell disease can be safely given prescriptions for analgesic medications to be taken at home for the mild to moderate pain that they encounter from time to time. In general, two strengths of narcotic medication are recommended: for milder pain, compounds containing codeine may be used; for more severe pain, Percodan or a similar drug may be needed. Oral properidine appears to be no more effective and is probably more addicting. These drugs are seldom abused by patients with sickle cell disease and addiction to narcotics is quite uncommon.

If the pain is so severe that Percodan is not able to bring sufficient relief, the patient usually seeks the attention of the doctor or enters the emergency room. When this occurs, the patient usually requires care at least 6-12 hours in order to try to "break" the painful episode. Adequate hydration needs to be maintained; this is most competently done with intravenous infusion of 5% dextrose half-normal saline. The use of nasal oxygen is optional; it has never been shown to modify the course of painful episodes. Blood transfusion is of no help in the treatment of the acute episode and should not be used.

If the patient seeks the attention of the doctor or emergency room, parenteral pain medications are nearly always required. The dose of Demerol or morphine which is prescribed depends upon the tolerance of the patient for such medications but it is best given at a given dose every three hours rather than as a p.r.n. order. Giving it as a regular dose avoids clock-watching by the patient and conflict between the patient and the nurse. The relief is never so complete that the patient cannot tell the physician when the medication is no longer required. As the painful episode eases, it is preferable to reduce the dose of narcotic but maintain the interval.

Two-thirds of the time, a painful episode can be aborted within 24 hours and hospitalization is not needed. In order to provide this care, however, a holding area in the Emergency Room must be available. If it is not, then the patient must be admitted because in an established painful episode, giving a shot of narcotic medication and sending the patient home will only cause the patient to return when the transitory effect of the medication has worn off. This often means repeated expensive trips back and forth to the emergency room to the exasperation of both the patient and the emergency room personnel.

If the painful episode is sufficiently severe to merit hospitalization (that is to say, if the patient is not able to return home on oral analgesic medications), the patient must be admitted to the hospital. The average stay in the hospital in the treatment of painful crisis in sickle cell disease is about five days. As the painful episode begins to resolve, the patient will require smaller and smaller doses of narcotic medication until sufficient analgesic can be obtained with oral medications. The patient cannot expect to stay in the hospital until the pain is completely gone, as

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this may take several days longer than hospitalization is necessary. If severe pain persists beyond ten days, bone infarct or osteomyelitis should be suspected. Osteomyelitis is fairly rare, occurring about 1 time per 1000 painful episodes.

Great care must be made to distinguish the painful episode from other causes of pain. In general, the patient can reliably state whether the pain he is experiencing is typical of previous episodes of sickle cell disease or is different. Further, in most instances of severe painful episodes, more than one body part is affected. Occasionally, the effects on the bones may alter surrounding structures; effusions into joints, sometimes bloody, can occur. In children, particularly, painful episodes involving flat bones and the small bones of the hands and feet may cause considerable swelling of overlying tissue. Rib pain may be easily confuse with pleuritic chest pain since affected ribs may hurt o deep breathing. The greatest care of all must be taken whe pain occurs in the abdomen; other causes of abdominal pai can mimic sickle cell disease and differential diagnosis ca be very difficult. Fever is an unusual accompaniment of th painful episode and a fever greater than 38°C should not b ascribed to the episode alone.

By approaching the patient with sympathy and understanding, a great deal of anxiety that accompanies the painful crisis can be relieved. Although no specific prophylaxis is available, much relief and satisfaction can be obtained by the understanding physician who uses analgesics and the available medical facilities in a logical and compassionate way.

SCIENTIFIC ARTICLE

Comparison of Ultrasonography and Oral Cholecystography in the Diagnosis of Gallbladder Disease

Thomas E. Simpson, M.D.

DURING the first six months of 1982, 231 cholecystectomies were performed at Forsyth Memorial Hospital for gallbladder disease. The operation followed ultrasound examination in 150 of these patients and oral cholecystography in 96. In 15 cases, both examinations were performed.

The 150 ultrasound examinations yielded 10 incorrect diagnoses: seven false negatives (4.7%) and three false positives (2%). The overall accuracy rate for ultrasonography was 93.3%.

Cholecystography was considered positive for gallbladder disease if stones were seen or if the gallbladder was not visualized after the patient had swallowed six Telepaque tablets on each of two subsequent days (a "double-dose" examination). Of the 96 examinations, 11 yielded incorrect diagnoses — an accuracy rate of 88.5%. There were seven false negatives (7.3%) and four false positives (4.2%).

When these results are compared with those reported from another local hospital in 1981,[1] it can be seen that the overall accuracy for oral cholecystograms in that series (94.8%) was higher, while the accuracy rate for ultrasonography (77.8%) was much lower. The authors of that report correctly predicted that improvements in equipment and refinements in technique, as well as additional experience with the method, would lead to improved results with ultrasound examination.

In other recent articles,[2-4] accuracy rates of 89 to 99% have been reported with ultrasonography.

In Forsyth Memorial Hospital at the time of these examinations, ultrasound was the more costly of the two procedures, the charge ranging from $65 to $75. The cost of oral cholecystography ranged from $47 to $77, depending on whether a "double-dose" examination was necessary.

The medical profession is fortunate in having two noninvasive diagnostic methods that yield good results in the diagnosis of gallbladder disease. While oral cholecystograms are less expensive and easier to interpret, ultrasonography gives more rapid results and, in most series, is more accurate. It would seem to be the method of choice for pregnant patients (since exposure to radiation might be harmful to the fetus) and in cases of acute cholecystitis, where rapid results are desirable.

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SCIENTIFIC ARTICLE

Value of Endoscopic Retrograde Cholangiopancreatography (ERCP) in a Community Hospital Setting

David R. Patterson, M.D.

ENDOSCOPIC cannulation of the ampulla of Vater is a technically difficult procedure requiring sophisticated equipment and considerable endoscopic skill. Since Hirschowitcz introduced fiberoptics into gastrointestinal endoscopy, there have been numerous reports of duodenoscopy beginning with McCune's report of endoscopic pancreatography in 1968 with the Eder fiberoptic endoscope, and a 25% success rate.[1] Endoscopic retrograde cholangiopancreatography (ERCP) was first introduced as a clinical procedure in Japan in 1969.[2] Currently success rates for pancreatography and cholangiography from various reported series approximate 85% and 70%, respectively.[3] ERCP was introduced primarily as a diagnostic procedure, and it currently remains such. However, a new era of endoscopic surgical applications has arisen allowing the introduction of surgical instruments through these endoscopes for purposes of removing gallstones and draining obstructed biliary ducts.

This series reports the ERCP experience of a 300 bed community hospital over the initial 2.5 year period of the introduction of ERCP in the community. Analysis of the first 104 cases performed was done in a retrospective manner by thorough chart review. Detailed studies of these cases have shown ERCP in this setting to be an extremely valuable procedure with minimal risks and high diagnostic yield.

ERCP Techniques

All ERCP cases were performed by one physician after clinical evaluation of each patient. Baseline laboratory data included CBC, coagulation studies, liver function tests, EKG, chest x-ray, amylase levels, and flat plate of the abdomen (to exclude the presence of barium in the gut that would interfere with fluoroscopy). Patients were held NPO past midnight if the ERCP exam was in the morning; otherwise they were allowed a clear liquid breakfast, then held NPO if an afternoon exam was needed. Pre-operative sedation included IM Demerol 50-100 mg, IM Vistaril 25-50 mg, IM Atropine 0.2-0.4 mg, and intravenous Valium 0-20 mg. During the procedure, IV Glucagon in 0.2 mg boluses was administered every 5-10 minutes as needed to achieve gut relaxation. Local Dyclone gargle or spray was used as a topical oropharyngeal anesthetic.

The Olympus JFB 3 side-viewing duodenoscope is advanced into the stomach with the patient in the left lateral decubitus position, and the upper gastrointestinal tract is examined. Direct visualization of the pylorus allows easy intubation of the duodenum. Gentle withdrawal of the endoscope at this time with torque rotation allows straightening of the endoscope along the lesser curvature of the stomach. The patient is brought into the prone position, which brings the ampulla of Vater into view so that the papillary opening can be selectively cannulated for either the pancreatic duct or the common bile duct. The former is usually approached in a direct en face position, whereas the common bile duct is approached in a more oblique manner, allowing the ERCP cannula to assume a cephalad position.

A commercially available Teflon-coated cannula 180 cm in length with an outside diameter of 1.7 mm (inside diameter 1.0 mm) is then inserted into the endoscope and directed into the desired position with the aid of the endoscope elevator which moves the cannula in an up and down position. Lateral movement of the cannula is achieved either by manual rotation of the end of the endoscope or by the lateral controls attached to the instrument.

High resolution fluoroscopy is mandatory with guidance by an experienced radiologist. Overfilling of the pancreatic duct is easily avoided with adequate fluoroscopy control. Spot films in various positions are required to correctly visualize all ducts in a 3-dimensional perspective and avoid false radiographic interpretations. The usual time period required for ERCP of course varies with one's endoscopic experience, but generally runs 15-45 minutes.

Cumulative Results

This series was limited to the first 104 cases performed over a 2.5 year period. With physicians' awareness of the value of ERCP, the number of cases has substantially increased since this initial series of cases. There were 97 patients, 70 females and 27 males, with an average age of 51.7 years. Reasons for ERCP cannulation were: unexplained epigastric or right upper quadrant abdominal pain in 51 patients, unexplained jaundice in 18 patients, unexplained weight loss in four patients, post cholecystectomy syndrome in 20 patients, and unexplained abdominal pain and weight loss in four patients. Each of these groups of patients is analyzed in greater detail below. There was a

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90.4% success rate (94/104) for pancreatic duct cannulation. Of the 10 cases that could not be cannulated, one involved a large paraesophageal hernia and the endoscope could not be passed into the duodenum, three cases were found to have pancreatic carcinoma obstructing the proximal pancreatic duct, and three cases were felt to simply be technical failures. Another three cases involved endoscopic sphincterotomies and pancreatograms were not attempted. There was a 60.6% success rate (63/104) for successful common bile duct cannulation. It is well recognized that cholangiography is the more difficult exam with a lower cannulation success rate than pancreatography.[4] Ohto et al. report a 73% success rate for endoscopic cholangiography with a large series of patients.[5] The overall success rates of cannulation seem to directly improve with time, experience, and greater number of cases.[6]

Endoscopic Findings

One of the major advantages of ERCP as a diagnostic procedure is the ability to endoscopically examine the stomach and duodenum. The side-viewing fiberoptic endoscope does not allow adequate visualization of the esophagus. The majority of the patients in this series were evaluated for abdominal pain of unknown etiology. A negative endoscopic exam at the time of ERCP was felt to be an extremely valuable diagnostic finding. Three patients were found to have peptic ulcer disease that had not been seen by conventional barium upper GI series. Two patients were found to have ampullary carcinoma with diagnostic endoscopic biopsies. Endoscopic exam alone gave a 6.7% yield of positive diagnoses in this series.

Complications

In this entire series, there was only one case of significant post procedure pancreatitis requiring nasogastric suction and medical support. There were no cases of perforation, cholangitis, or sepsis. Generally accepted figures for complications associated with ERCP are an incidence of pancreatitis 0.7 to 7.4%, cholangitis 0.6 to 0.8%, and bacteremia from 0 to 14%.[7]

Specific Diagnostic Categories

Duodenal Diverticulae

For years there has been much speculation concerning the presence of duodenal diverticulae and biliary dyskinesia. Osnes et al. found a 39% incidence of duodenal diverticulae in 90 abnormal ERCP exams. In 84 normal ERCP exams, there was only a 6% incidence of duodenal diverticulae.[8] Bacteriocholia has been found in 71.8% of patients with duodenal diverticulae and calculous biliary tract disease, as opposed to 34.3% incidence in patients with cholelithiasis without duodenal diverticulae.[9] In the present series, 13 patients were found to have duodenal diverticulae (13.4%). Of this group 12/13 were evaluated for unexplained abdominal pain and one for painless jaundice. Pancreas divisum (failure of embryonic fusion of the dorsal and ventral pancreatic ducts) was seen in two patients (both had large diverticulae without evidence of other biliary abnormalities). Chronic pancreatitis was present in four patients. Of these, two patients with large diverticulae were felt to have a diagnosis of idiopathic pancreatitis (no history of alcohol use), whereas the two patients with small diverticulae were felt to have chronic pancreatitis secondary to post automobile-accident trauma and possibly from chronic thiazide diuretic use. Common bile duct stones were found in two patients with moderate sized diverticulae. Small diverticulae were seen in individual patients with idiopathic acute relapsing pancreatitis, suspected ampullary stenosis, drug induced jaundice, ischemic bowel disease, and cystadenocarcinoma of the pancreas. As a group, these patients with periampullary duodenal diverticulae proved to have a high incidence of varied pancreatic-biliary abnormalities.

Pancreas Divisum

Most congenital pancreatic abnormalities result from failure of the primitive ducts embryonically to anastomose, or from variations in the migration of the ventral pancreas.[10] Most congenital pancreatic abnormalities of ectopic pancreatic tissue or pancreatic duct variations are of little clinical significance. However, there are numerous reports of acute relapsing pancreatitis possibly secondary to inadequate drainage of the body and tail of the pancreas through a small minor ampullary opening.[11] Gregg has documented the clinical significance of acute pancreatitis and an unfused pancreatic ductal system.[12] He found that 6/21 patients with ERCP-documented pancreas divisum had no other apparent cause for their multiple attacks of pancreatitis. Cooperman et al. have shown the benefit of surgical correction of the relative stenosis of the duct of Santorini into the duodenum in this condition.[13]

In this series, 8/97 patients were found to have pancreas divisum (8.2%). ERCP was performed because of unexplained abdominal pain in 7/8, and because of jaundice in one patient. Pancreatitis without other etiologic causes was felt to be the diagnosis in 6/8 patients. One was found to have ischemic bowel problems, and one had an inflammatory stricture of the common hepatic duct. Ultrasound exams were normal in 6/8 patients, and amylase values were elevated in only one patient with severe acute relapsing pancreatitis requiring eventual surgical sphincterotomy of the minor ampulla. Duodenal diverticulae were seen in two patients. Cannulation of the minor ampulla was not technically possible in any of these eight cases.

Chronic Pancreatitis

Pancreatograms demonstrating changes of chronic pancreatitis were found in 10/97 patients (10.3%). These cases do not include those found to have pancreas divisum. All patients experienced chronic or recurrent abdominal pain as their main complaint. Prior abdominal ultrasound exams or CT exams were normal in 3/10 patients. Confirmatory secretin stimulation tests or Lundh test meals were not performed in this series. Amylase values were elevated in 50% of cases. Symptom duration ranged from several months to several years. Causes for the chronic pancreatitis were felt to be: alcoholism in three, sarcoidosis in one, possible chronic thiazide diuretic use in one, and five patients with idiopathic causes. Prominent duodenal diverticulae were seen in 3/5 of this last group of patients. Two patients had associated inflammatory distal common bile duct strictures on endoscopic cholangiography. This complication of chronic pancreatitis is well reviewed by several authors.[14-17]

Pancreatic Carcinoma

In this series, 12 patients (12.4%) were found to have pancreatic carcinoma, and one had carcinoma of the gallbladder with an associated malignant biliary stricture. The average age of these patients was 58.6 years ranging from 21 to 92 years. There were six females and seven males. Clinical presentations in this group were: abdominal pain alone in six patients, jaundice alone in three patients, and abdominal pain with jaundice in three patients. Adenocarcinoma was found in nine cases, islet cell carcinoma in one case, and cystadenocarcinoma in two cases. Tissue diagnosis was obtained by endoscopic biopsy in two cases, by percutaneous transabdominal needle biopsy in two cases, and by surgical biopsies in seven cases. One patient died of pulmonary emboli before a tissue diagnosis could be obtained.

Abdominal ultrasound or CT scans were extremely useful as a pre-ERCP procedure. Pancreatic enlargements were seen in 10/12 patients, one patient had dilated extrahepatic ducts alone, and only one case showed no pancreatic or bile duct abnormalities. Serum amylase levels were elevated in 5/12 patients, liver function tests were abnormal in 10/12 patients, and only one patient had both normal liver function tests and serum amylase values.

ERCP in these cases showed a variety of abnormal pancreatograms which are well reviewed by several authors.[18, 19] In three cases where the pancreatic duct could not be cannulated, two had irregular strictures of the distal common bile duct, and all were found to have pancreatic cancer at laparotomy. One patient's ampulla could not be cannulated secondary to a fungating ampullary carcinoma. The diagnosis in this case was established by endoscopic biopsy. In only one case was pancreatic cancer discovered with a normal pancreatogram and cholangiogram. Prior abdominal CT scan had shown a mass in the head of the pancreas, and abnormal tissue was seen in the duodenum at the time of ERCP. Endoscopic biopsy in this case was negative for malignancy, but liver biopsy gave a positive pre-operative diagnosis. This phenomenon has been reported previously.[20] The outcome of these patients was generally dismal with or without surgical palliative bypass procedures. The two patients with cystadenocarcinoma, however, have been without evidence of recurrent disease over a 3-year follow-up period. One patient had a Whipple's procedure performed, but presented with recurrent metastatic disease one year later. The patient with islet cell carcinoma has been lost to follow-up at a local medical center.

ERCP was an extremely valuable secondary procedure in these cases after initial clinical and laboratory evaluation followed by abdominal ultrasound or CT exams. ERCP allowed tissue diagnosis in several cases, and was valuable in determining decisions concerning surgical intervention for palliative or curative attempts.

Unexplained Jaundice

There were 18 cases of unexplained jaundice as the primary reason for ERCP. Successful biliary cannulation was achieved in 15/18 cases (83.3%). Subsequent cholangiograms were obtained at surgery in one case and by percutaneous cholangiography in one case. Various diagnoses were found in these cases as listed in table 1.

Table 1
Unexplained Jaundice (18.5% Cases)

Biliary stricture (inflammatory)	3
Malignant stricture (pancreatic carcinoma)	5
Malignant stricture (bile duct carcinoma)	2
Biliary calculi	3
Chronic pancreatitis	1
Cholestatic hepatitis (viral or drugs)	4

Post-Cholecystectomy Syndrome

There were 20 patients (20.6%) with prior cholecystectomies referred for ERCP exam because of recurrent, unexplained abdominal pain. All patients were females with a mean age of 52 years. Abnormal liver function tests and/or serum amylase values were present in 13 patients. Only 15.4% (2/13) of these patients had no etiology of their pain syndrome determined with the aid of ERCP. However, two patients had normal ERCPs but were felt clinically to have passed small common bile duct stones, and three patients were clinically felt to have a syndrome compatible with ampullary spasm despite a normal ERCP exam. Patients with normal liver function tests and/or serum amylase values had a 57% incidence (4/7) of normal ERCP exams. It is of note, however, that one patient in this group had a

Table 2
Post-Cholecystectomy Syndrome (20.6%)

Diagnosis	# Cases	Abnormal LFTs	Abnormal serum amylase	Abnormal abdominal ultrasound	Abnormal ERCP
Chronic pancreatitis	2	1	0	1	2
Carcinoma of pancreas	1	1	0	1	1
Unexplained acute relapsing pancreatitis	2	1	1	0	0
Suspected ampullary spasm	3	3	1	0	0
Common bile duct stones	2	1	0	not done	2
Suspected passed CBD stones	2	2	1	0	0
Ischemic bowel	1	1	0	0	0
Pancreas divisum	1	0	0	0	1
Irritable bowel syndrome	6	2	0	0	0

retained common bile duct stone requiring endoscopic sphincterotomy in the presence of normal liver function tests. Abdominal ultrasonography was abnormal in one case of pancreatic carcinoma and one case of chronic pancreatitis. However, ultrasound exams were unremarkable in seven other cases where diagnoses were reached with the aid of ERCP. Many of these cases had normal ERCPs where clinical diagnoses were made with additional pertinent historical, physical, and laboratory determinations. As one would expect, this heterogeneous group of patients is so diverse in presentation and clinical course, that only eventual long-term follow-up in many cases will give absolute answers. The above results are summarized in table 2, and this syndrome is reviewed in several series by several authors.[21-23]

Irritable Bowel Syndrome

There were 18 patients in this series who were felt to have a diagnosis of irritable bowel syndrome after complete ERCP evaluation. Of this group, 17/18 patients were females with a mean age of 44.2 years. Unexplained abdominal pain was the primary reason for ERCP exam in all patients; five had had prior cholecystectomies. Abdominal ultrasound exams and/or CT scans were normal in 17/18 (94.4%). Only one patient was found to have a transient elevation in the serum amylase level, and only two patients had slight elevations of liver function tests. Of 20 male patients evaluated for unexplained abdominal pain, only 2/20 (10%) were felt to have a functional cause for their abdominal pain.

Conclusions

From this series, one can see the immense diagnostic value of ERCP to the clinician in various difficult clinical settings. ERCP was initiated in the vast majority of these patients because less invasive diagnostic studies had failed to give an adequate diagnosis. In many instances a normal ERCP with a normal endoscopic exam of the upper gastrointestinal tract was the final bit of data which allowed the clinician to establish a functional diagnosis. These patients have since been spared repetitive and superfluous exams, radiographs, and various laboratory investigations.

Endoscopic exam alone of the stomach and duodenum gave a 6.7% diagnostic yield where prior upper GI series had usually been normal. Ampullary carcinoma was discovered in two patients, providing valuable information to be applied to the decision on surgical intervention for palliative or curative purposes. Unusual and poorly recognized pathological conditions such as duodenal diverticulae, pancreas divisum, chronic pancreatitis, and ampullary spasm were frequently discovered by these ERCP exams. ERCP frequently either confirmed or clarified reasons for unexplained jaundice and pancreatic enlargements seen by abdominal ultrasound or CT scans. Patients with pancreas divisum and chronic pancreatitis were thus spared fine needle or surgical biopsy procedures. Jaundiced patients with common bile duct stones can currently be spared exploratory surgery by endoscopic sphincterotomy.

Problems such as the post-cholecystectomy syndrome are best evaluated by proceeding directly to the ERCP exam. Patients thus avoid many unreliable x-ray procedures such as intravenous cholangiography, and are able to have an adequate endoscopic exam of the upper gastrointestinal areas.

From this series it appears that unexplained upper abdominal pain is rarely functional (1) in male patients, (2) in the face of an abnormal abdominal ultrasound or CT scan exam, or (3) with associated abnormalities in the serum liver function tests or amylase values. Female patients with unexplained upper abdominal pain and normal liver function tests, amylase values, and abdominal ultrasound or CT scan exams are not very likely to have demonstrable ERCP abnormalities except for pancreas divisum.

This series of ERCP cases reflects the type of cases and clinical situations most likely to appear in a community hospital setting. Upper abdominal pain with or without jaundice, weight loss, or previous cholecystectomy seems to be the overwhelming diagnostic problem (81.4% of cases). Unexplained jaundice prompted the ERCP exams in 18.6% of cases, and successful cholangiograms were achieved in 83.3% of cases. As the clinical usefulness of ERCP becomes more recognized in community hospital settings, more potentially definable diagnoses will be achieved. The risk of this procedure is extremely small, and the cost is potentially very reasonable as endoscopists' skill and expertise improve with experience. Prior endoscopic exams and their additional costs can perhaps be curtailed if the clinician feels ERCP will be needed in various diagnostic clinical settings. Endoscopic sphincterotomy has been initiated in our community hospital, and seems to be an extremely valuable, safe, and useful procedure. This endoscopic surgical procedure should not be instituted without extensive previous ERCP experience.

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TOXIC ENCOUNTERS

Strawberry Shortcake and Whippets: Nitrous Oxide Intoxication

Ronald B. Mack, M.D.

I have often boasted to medical students and House Officers that I could take them through Krogers or any large supermarket and readily find ten items that could produce a mind altering experience but would not necessarily kill you. How many can you think of? (My list will appear at the end of this article.) One of them is what this paper is about.

There are certain food combinations that just seem to go together, e.g., linguine and clam sauce, liver and onions (ugh!!), and strawberry shortcake and whipped cream. Unless you are kinky, eating strawberry shortcake is probably not going to give you a psychedelic experience, but what about the whipped cream? If you purchase an aerosol can of whipped cream and leave it alone (that is, do not shake it) and then squirt it unshaken you will release a jet of nitrous oxide — "laughing gas" — instead of whipped cream. Many other food or beverage containers use CO_2 propellants but CO_2 would "sour" the whipped cream so nitrous oxide is used. N_2O cartridges can be also purchased in restaurant supply houses and are known as "whippets." Whipped cream dispensers can contain about 3 liters of 90% nitrous oxide and whipped cream chargers contain about 5 liters of 95% pure gas. For serious devotees of this procedure, tanks of N_2O can be purchased or purloined.

Getting high on a whipped cream dispenser!! Really, what's the catch? It's true. Abuse of this substance can produce a "high" — a state of euphoria — consisting of a minute long "rush" followed by a tingling all-over sensation that lasts another minute or two. Proper usage consists in either substituting these whippets for CO_2 chargers in soda water dispensers and then discharging the nitrous oxide directly into the mouth or you can load a balloon with N_2O and squeeze it out or, more easily, merely squirt it directly from an upright unshaken whipped cream can. Abuse of nitrous oxide seems to be a fairly sophisticated endeavor and more apt to be found among college age young people and health care professionals, especially medical and dental students, dentists and anesthesiologists. The major acute danger of breathing this gas is asphyxation. If the user inhales the gas for several minutes without supplementing the intake with oxygen, arrhythmias and even death can follow. Nitrous oxide has been used as an anesthetic since 1844; it is a colorless gas without very much odor or taste. It is not flammable, but will support combustion. N_2O provides analgesia, decreased consciousness and depression of reflexes and does not exert toxic effects on the CNS nor is it likely to cause malignant hyperthermia.

Chronic use of nitrous oxide is definitely no laughing matter. Repeat exposures to nitrous oxide can depress the bone marrow, impair peripheral nerve function and destroy brain cells. Chronic use can adversely affect dividing cells. Vitamin B_{12} metabolism is affected and production of tetrahydrofolate is impaired leading to abnormal DNA synthesis. The abnormal neurological syndromes that have been reported following chronic N_2O use include a diffuse polyneuropathy with more sensory than motor difficulties, gait ataxia, leg weakness, impotence and sphincter disturbances. Neurological examination of these patients reveal a sensorimotor polyneuropathy often combined with signs of posterior and lateral spinal cord involvement; damage may be permanent but recovery is possible, however slow. Another neurological clinical feature, *Lhermitte's sign*, has been reported following chronic nitrous oxide use; here there is development of sudden, transient, electric-like shocks extending down the spine when the patient flexes the head forward. Probably the most common abnormal neurological features found include tingling, numbness and muscle weakness. This latter difficulty is more apt to be seen in dentists and chairside assistants who are using nitrous oxide legitimately but on a chronic basis. One report estimates that as many as one-third of dentists use nitrous oxide in their practices.

If you figured that there was no specific therapy for the adverse effects of chronic nitrous oxide exposure, you were correct. Stopping exposure to the gas would seem to be a wise first step. Treatment with corticosteroids or Vitamin B_{12} has been tried with no apparent effect on recovery. The best advice is to find something else to "turn on" to — like jelly beans (maybe that's not such a good idea; if you eat too many you may have to go to the dentist and he may give you nitrous oxide).

Ten prescription-free "trips" available from your nearest supermarket:

1. Whipped cream dispensers — N_2O
2. Diet pills — phenylpropanolamine ("street speed")
3. Mouth wash — ethanol
4. Liquid rubber shoe repair kit — trichlorethane (when inhaled can produce a "high")
5. OTC sleeping pills — contain antihistamines that

From the Department of Pediatrics, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC 27103.

can produce an anticholinergic syndrome with hallucinations, etc.)

6. Nutmeg — psychodelic experience
7. Paint thinner — petroleum distillate which when inhaled produces a "high"
8. OTC "cold" or allergy medicines — phenylpropanolamine
9. Lighter fluid — petroleum distillate
10. OTC cough medicines — codeine, dextromethorphan

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Interaction with other CNS depressants (anesthetics, tranquilizers, sedatives) may exhibit additive CNS depression.

Usage in Pregnancy: Safe use has not been established in pregnant women.

Pediatric Use: Should not be administered to children under 12.

PRECAUTIONS: Increased cranial pressure may occur in presence of head injury. Promethazine should be administered cautiously to patients with cardio-vascular or liver disease. Acute abdominal conditions may be obscured. The drug should be given with caution to the elderly or debilitated, and those with severe impairment of hepatic and renal function, hyperthyroidism, Addison's disease and protatic hypertrophy or urethral stricture.

ADVERSE REACTIONS: The most frequently observed reactions include dizziness, lightheadedness, sedation nausea, vomiting and constipation.

DOSAGE AND ADMINISTRATION: Dosage should be adjusted to severity of pain, and the response of the patient. The usual dose is in one or two capsules every 4 to 6 hours as required.

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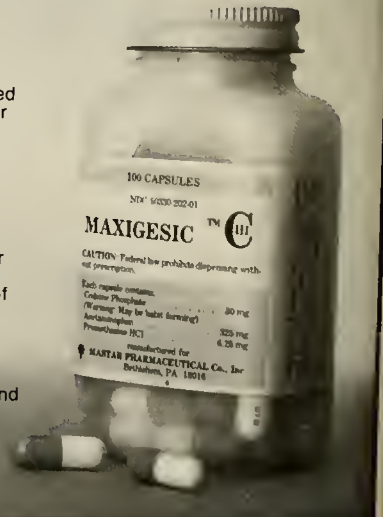

Learning without Work

Cross-Sectional Medicine — A Trap for the Unwary

Marcus E. Carr, Jr., M.D., Ph.D.

This is the account of a patient with an underlying fatal disease and incidental bacterial endocarditis.

The cross-sectional study of the patient by the hospital staff indicated that the patient had subacute bacterial endocarditis. The presence of another fatal disease on which the endocarditis was grafted was not recognized. That portion of the hospital staff who did not extend the cross-section cut to a longitudinal followup learned things that were not so.

Story

A 58-year-old black man was referred to North Carolina Memorial Hospital for evaluation of suspected malignancy. Five months prior to admission he noted the insidious onset of increasing shortness of breath and was found to be anemic. He was empirically treated with oral and subsequently with parenteral iron though no source of blood loss was found. He did not improve, became steadily weaker, had a poor appetite, lost approximately 50 pounds, and was admitted to North Carolina Memorial Hospital. He denied having rheumatic fever or a heart murmur. His temperature had not been recorded.

Physical examination was remarkable only for a temperature of 39°C, very poor dentition and a grade I/VI systolic murmur heard at the lower left sternal border and at the apex. The spleen was not palpable, and there was no evidence of embolic phenomena. Laboratory data included normal serum electrolytes, a total serum protein of 9.3 g/dl (normal 6.8-8.3), and an albumin of 2.5 g/dl (normal 3.5-5.0). Liver function tests were normal. The hematocrit was 21, hemoglobin 7.0 g/dl, the reticulocyte count 1.8, the white cell count 9,500 and the platelet count 333 thousand. The white cell differential was 77% PMN's, 6% bands, 12% lymphocytes and 5% monocytes. Coagulation studies revealed a normal PT and PTT but the thrombin clotting time was prolonged at 22.1 seconds with a control of 12.4 and corrected only to 16.6 with mixing. Urinalysis showed a specific gravity of 1.013 and 3+ proteinuria.

It was felt that the patient had an underlying malignancy, most likely multiple myeloma, and that he was secondarily infected. Blood cultures were drawn and the patient was placed on cefazolin and tobramycin. A bone marrow aspirate revealed 20% plasma cells and stainable iron was present. Evaluation by oral surgery revealed a lytic lesion in the mandible on x-ray. RBC indices were normal with MCV = 92, MCH = 31 and MCHC = 34. There was a polyclonal increase in IgG at 3567 mg/dl (normal 525-1650) and in IgA at 621 (normal 40-390). Rheumatoid factor was positive to a dilution of 1 : 160. No monoclonal spike was found on electrophoresis of blood or urine. On the fourth hospital day three out of three blood cultures grew Streptococcus intermedius. The tobramycin was stopped. On the sixth hospital day an aortic diastolic murmur was noted and the diagnosis of subacute bacterial endocarditis was made. The diastolic murmur increased initially from a grade I/VI to a grade II/VI but then stabilized. Two dimensional cardiac echo could not demonstrate vegetations but did confirm the aortic insufficiency. The patient was treated with two weeks of combined gentamicin and penicillin therapy and subsequently with an additional two weeks of IV penicillin. The remainder of the hospital course was complicated only by a persistent anemia with hemoglobin down to 6.4 g/dl. The patient required multiple transfusions of packed red blood cells to prevent the onset of angina which tended to occur whenever his hematocrit fell below 20. By the end of his hospitalization his hematocrit had stabilized in the mid-thirties. Prior to discharge the patient underwent full mouth extraction. Biopsy of the lytic lesion was performed intraoperatively and revealed only necrotic tissue.

After discharge the patient was followed by his local physician and apparently did well except for his continuing low-grade anemia. Unfortunately his anemia worsened two months after discharge and he died suddenly during a blood transfusion. An autopsy was declined.

Discussion

Did our patient have subacute bacterial endocarditis mimicking myeloma, or did he have myeloma which deranged his immune system and made the endothelium of the aortic valve more susceptible to injury from the increased cardiovascular activity caused by anemia? The diagnosis of myeloma was suggested by the five-month history of shortness of breath compatible with anemia, the 50-pound weight loss, the lytic lesion on the mandible, the finding of 20% plasma cells in the bone marrow, the need for continued transfusions after successful treatment of the bacterial infection, the recurrence of anemia, and death within two months of discharge. We frequently make a positive diagnosis of myeloma when this clinical picture is accompanied by positive chemical biopsies — namely, Bence Jones protein in the urine, and a myeloma spike in the serum. These findings were not present.

The positive blood cultures, the appearance of the aortic diastolic murmur and the response to appropriate antibiotic

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From the Department of Medicine, NC Memorial Hospital, Chapel Hill, NC 27514.

therapy establish the diagnosis of endocarditis. Infection can cause a polyclonal increase in IgG and IgA, and increase the number of plasma cells in bone marrow. Could the nonspecific increase in serum globulins caused by the bacterial endocarditis mask a myeloma spike in the serum? A level of globulin of 6.8 is high for the nonspecific effect of bacterial infection.

At the time of discharge, the doctors thought that the patient had taught them that multiple myeloma could mimic bacterial endocarditis and they spent considerable time documenting that anemia could be a presenting finding in subacute bacterial endocarditis. The writing of this paper stimulated them to obtain information on his post-hospital course. The continuation of his severe anemia and his death within two months of discharge surprised them. The diagnosis of a malignancy, probably myeloma, with endocarditis secondary to the primary illness became the best bet.

Among the many learning experiences derived from caring for this patient, the most important was that hospital medicine represents a cross-sectional cut of an illness; the truth comes from a longitudinal view that follows the patient after he leaves the hospital.

On The Value of Taking a History

William B. Blythe, M.D.

Several years ago on a New Year's Eve I was dining with my family in a lovely restaurant in Charleston, South Carolina. I was enjoying immensely the ambience and good food and was thoroughly pleased with the moment, even though I was seated facing the wall.

Suddenly, one of my sons exclaimed that a man several tables away appeared to be choking to death and in immediate need of a doctor. I was seized by intense feelings of ambivalence. On the one hand, I was exquisitely proud that one of my children had openly expressed the view that I might be a physician, while on the other — having been trained as an internist with a natural bent towards therapeutic nihilism — I was terrified at the prospect that I should have to intervene physically to save a man's life.

I arose from the table, turned around, and was confronted by a sobbing young woman standing behind — and with her arms around — a young man who was slumped over his plate. Instantaneously, the woman was replaced by a strong, burly man who began to perform the Heimlich maneuver on the drooping patient.

Still frightened by the thought that I might have to do something dramatic, I sought to delay by taking a history from the disengaged young woman. "What has your companion had to eat? What did he choke on?" I asked. "Nothing! Nothing! He's had nothing to eat," she cried!

Aha, I thought, it is unlikely that his airway is obstructed by a foreign body. So I said calmly and quietly to the strong man who was continuing to clamp the slumping patient's abdomen and chest with pulsating bear hugs, "I am a physician, shall we lay him down on the floor for a few minutes?" Within seconds the patient awoke and wondered about the commotion around him. "I have had nothing to eat all day," he said, "and I think that I fainted."

I agreed with him that this seemed to be the likely diagnosis and advised him to call a doctor should he have any further trouble.

I then reasoned that perhaps the patient *had* fainted and was being made worse by the bear hugs which prevented proper oxygenation of the blood as well as by being held in the passive upright position — a situation analogous to crucifixion wherein the victims die as a consequence of blood pooling in the lower parts of the body with inadequate venous return to the heart.

Perhaps, I gloated, I saved his life by *stopping* a life-saving maneuver, the sweetest of visions of a therapeutic nihilist.

I returned to my table and my bewildered children, who, having seen me do nothing but speak to a beautiful young woman, wondered anew about what their father does for a living.

From the Department of Medicine, UNC School of Medicine, Chapel Hill, NC 27514.

Illustration by Ernest Craige, M.D.

Infectious Mononucleosis Presenting as Cat Scratch Disease

William M. Hendricks, M.D. and Melvin Rosenthal, M.D.

Infectious mononucleosis is a common disease caused by the Epstein-Barr virus. Laboratory studies have evolved to help pinpoint the diagnosis, which clinically may be difficult to distinguish from other viral illnesses. We would like to report an unusual presentation of infectious mononucleosis which simulated cat scratch disease.

A 37-year-old librarian was in excellent health, vigorously training up to two times a day during the winter months for a marathon, when he began to feel weak and tired. Ten days later he noted a slightly tender lump in his groin. He saw a physician who palpated an enlarged lymph node in the right inguinal region. No lymphangitis or hepatosplenomegaly was noted. Over the next 10 days the patient began to run fevers of 39°C, and developed more tenderness in the right inguinal region. Upon further questioning, the patient remembered being scratched on his right upper thigh by his cat 8 to 10 days before his illness began. The scratch, which had drawn blood, healed promptly and was never infected or indurated.

On physical examination approximately three weeks after the onset of this illness the patient's pharynx was normal, although his liver and spleen were palpable 4-5 cm and 1-2 cm below their respective costal margins. There was no lymphadenopathy except in the right inguinal region, where two large, tender, movable lymph nodes were palpated. The skin on the right upper thigh appeared normal.

Past history included an episode of generalized lymphadenopathy, hepatosplenomegaly, high fever, sore throat, and malaise when the patient was nine years old. This was diagnosed clinically and by blood tests as infectious mononucleosis.

Considering the history and physical examination, a tentative diagnosis of cat scratch disease was made, and the patient was started on a trial of tetracycline 500 mg q.i.d.[1] The next day the complete blood count revealed the following: hemoglobin 15.7 gm/dl, white blood count 7,700 with 15% neutrophils, 11% bands, 22% lymphocytes, 46% atypical lymphocytes, 4% monocytes, 1% immature mononuclear cells, and 1% basophils, and platelets 222,000/hpf. The alkaline phosphatase was 238 U/l, lactic dehydrogenase 620 U/l, serum glutamic oxaloacetic transaminase 81 U/l, creatinine phosphokinase 54 U/l, total bilirubin 0.9 mg/dl, direct bilirubin 0.1 mg/dl, creatinine 1.0 mg/dl, and total protein 6.9 g/dl. The mono spot test was positive, while the heterophile test (Davidsohn modification with the serum absorbed with guinea pig kidney) was positive at a dilution of 1:640. The VDRL, HAA, and CMV tests were negative, while Bedsonia titers were positive at a dilution of 1:16. A urinalysis was normal, and a culture of the urine was sterile. Intradermal skin tests with 5 units PPD and cat scratch antigen were negative. A biopsy of the site of the cat scratch test was interpreted as nonspecific with no granuloma formation.

A diagnosis of infectious mononucleosis was made, and tetracycline was discontinued. One month later repeat liver function enzymes were normal, and the right inguinal lymphadenopathy had completely disappeared. A repeat skin test with the cat scratch antigen approximately one year later was negative. Fluorescent antibody titrations using 1:10 to 1:320 dilutions of the patient's serum and an antigen-bearing line of commercially obtained Burkitt's lymphoma cells (P-3 cells, HR1K) were performed, but no antibody was detected early in the course of the illness or during convalescence.

Discussion

Cat scratch disease is a difficult diagnosis to make. The etiologic agent, probably a virus, has not been identified, and specific serological tests have yet to be devised. Bedsonia titers are generally considered to be non-specific,[2] while the cat scratch antigen is difficult to obtain and not always reliable.[3] One must therefore depend on the clinical history and physical examination, and must rule out other diseases such as pyogenic infections, tuberculosis, lymphogranuloma venereum, tularemia, sporotrichosis, syphilis, infectious mononucleosis, and especially lymphomas.

Cat scratch disease usually presents with tender regional lymphadenopathy one to three weeks after the cat scratch agent has been introduced into the skin. Cats are not necessary for the transmission of this disease,[1, 4] and have no reaction to the cat scratch antigen. Their claws are probably contaminated with the infectious agent through contact with birds or other small animals, which serve as the natural reservoir for this disease. Thorns, spicules of bone, splinters, etc. may also act as mechanical vectors. Constitutional symptoms are common and include a low-grade fever, malaise, and headache. Lassitude is often marked, and the size of the involved lymph nodes may be striking.[4] These may suppurate forming sinus tracts which heal with fibrosis. Rarely, generalized lymphadenopathy, hepatomegaly and/or splenomegaly have been described.[5]

Infectious mononucleosis,[6] on the other hand, is usually characterized by malaise, sore throat with pharyngitis, and low grade fever. Lymphadenopathy occurs early or late in the illness, and almost always involves the anterior and posterior cervical lymph nodes. Hepatomegaly with or without splenomegaly is usually present, and 10-20% of patients have an erythematous macular skin rash, especially on the trunk.

Although our patient had a history of a cat scratch, his laboratory studies were consistent with infectious mononucleosis. What part, if any, the patient's cat played in his illness, therefore, is not clear. His symptoms began before

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he was injured by his pet, but his lymphadenopathy was curiously localized to the site of the cat scratch. We were unable to document simultaneous infectious mononucleosis and cat scratch disease.

It is interesting that our patient had a mononucleosis-like illness 28 years previously, since recurrences of infectious mononucleosis are thought to be rare. Yet, the Epstein-Barr virus has been isolated from the oropharynx of almost 50% of patients receiving immunosuppressive therapy. This suggests that the virus may be reactivated in a manner analogous to the herpes simplex virus.[7, 8] Sheehan[9] has observed an increased incidence of infectious mononucleosis and mononucleosis-like syndromes in long distance runners, especially following periods of overexertion.

It is curious that the fluorescent antibody titers for the Epstein-Barr virus were negative. Infectious mononucleosis with negative E-B virus specific studies have been reported.[10] Assuming that there were no technical laboratory errors, it is possible that our patient has a selective defect in his ability to respond to the Epstein-Barr virus. This may help explain his second episode of infectious mononucleosis. Antigenic strain variations among the Epstein-Barr virus would be another explanation.

Acknowledgments

We would like to thank Dr. Emanuel Wolinsky at Cleveland Metropolitan General Hospital for use of his cat scratch antigen. Dr. Beno Michel at Case Western Reserve University for interpreting the skin biopsy, and Dr. Michael Letterman at Case Western Reserve University for his help.

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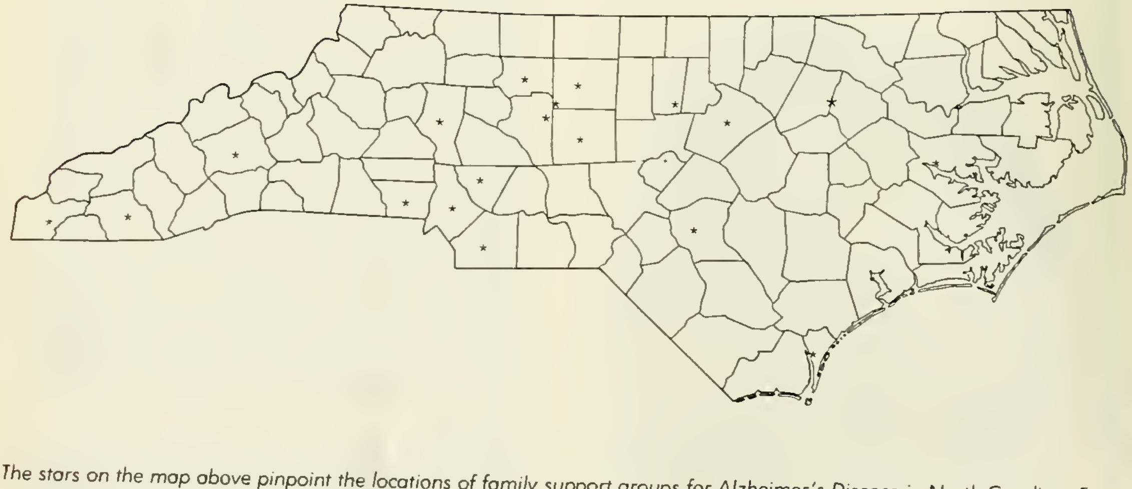

The stars on the map above pinpoint the locations of family support groups for Alzheimer's Disease in North Carolina. From west to east the locations are Murphy, Franklin, Asheville, Gastonia, Statesville, Charlotte, Concord, Monroe, Winston-Salem, Thomasville, High Point, Greensboro, Asheboro, Chapel Hill, Fayetteville, Raleigh, Wilmington, Rocky Mount, Washington.

Features for Patients

Alzheimer's Disease

Lisa Gwyther

What Is Alzheimer's Disease?

Alzheimer's Disease is a little known but surprisingly common disorder of the brain that causes loss of memory and mental deterioration. It is progressive, irreversible and, at this time, there is no known definitive cause nor is there a cure. In this disease, the nerve endings in the outer layers of the brain degenerate, interrupting the passage of electrochemical signals between the cells. The focal areas of degeneration in the brain have a characteristic appearance under the microscope and are called "plaques."

Alzheimer's Disease was named for a German physician who first identified these specific brain changes in an autopsy performed on a woman with symptoms of this disease. Alzheimer's Disease and related disorders are often called senility or organic brain syndrome. These terms refer to a set of symptoms that go together and may be the results of other treatable or untreatable conditions. Alzheimer's Disease is *not* caused by lack of blood or oxygen getting to the brain. It is not the result of vitamin deficiency, stress, or lack of intellectual stimulation although these problems can make Alzheimer's patients appear worse. The development and course of this disease is a source of deep frustration for those afflicted and their loved ones.

Who Gets Alzheimer's Disease?

An estimated 25,000 North Carolinians and over 2 million older Americans are affected by this disease and related disorders such as those caused by multiple small strokes (multi infarct dementia). Over half the current residents of nursing homes have some type of dementing illness, but twice as many older persons living in the community are equally impaired. Alzheimer's dementia is most common in persons over 60 but it does affect people in their 40s and 50s. An estimated 5-10% of persons over 65 have moderate to severe dementia and the estimate goes up to 20% of persons over 80. It is found in both sexes and in people of all races and social, economic, educational, and environmental backgrounds. Whether or not Alzheimer's Disease is inherited is uncertain, and this question is the subject of much research. Alzheimer's Disease is twice as common as vascular dementia ("hardening of the arteries").

What Are the Symptoms?

The first symptoms of Alzheimer's Disease appear minor and imperceptible and they develop gradually. Patients and families tend to overlook these occasional difficulties or attribute them to temporary problems like stress, depression or fatigue. Loss of recent memory usually occurs first, and this may be more noticeable to family, friends, or employers than to the patient. The patient may have trouble with familiar names, finding familiar places, misplacing things, or completing routine tasks in a reasonable amount of time. He or she may repeat already answered questions, withdraw from usual activities, experience difficulty handling money, become lost on familiar routes, or develop changes in personality, mood or behavior. As the disease progresses, there is increasing forgetfulness, disorientation, and problems with judgment, concentration, and language. Patients may become depressed, suspicious, fidgety, or even uncharacteristically tactless or aggressive. In the final stages, patients need help with bathing, dressing, and eating. Patients eventually require total supervision and care. Death usually occurs four to 14 years after symptoms develop. Surprisingly, in the early stages patients appear unusually healthy, vigorous, and socially adept, and they rarely complain of any discomfort. In the later stages, patients become vulnerable to a variety of physical problems. Death is usually the result of a secondary problem like pneumonia, infection, or stroke.

What Can Be Done for Alzheimer's Victims?

Potential Alzheimer's Disease victims deserve a thorough medical/neurological/psychiatric evaluation to rule out all other illnesses causing similar symptoms. Sometimes reversible conditions, such as drug reactions, depression, thyroid disorders, or sensory loss can be identi-

> "This is *not* my daddy." (daughter of an Alzheimer's victim)

From the Duke ADRDA Family Support Network, Box 2914, Duke University Medical Center, Durham, NC 27710.

"The doctor said, 'What do you expect for her age? Just take her home and love her.' But I'm her only daughter, and she's my only mother."

fied and treated successfully. After all other medical problems are treated or ruled out, a diagnosis of Alzheimer's Disease usually can be made on the basis of history, mental status, and the course of the illness. Because the cause and cure of Alzheimer's Disease are still unknown, there is no prevention. However, THERE IS HELP. Primary medical care to relieve troubling symptoms, and family counseling to prevent further complications are effective. Depression, anxiety, sleep problems, aggression, hearing or visual losses can be managed to minimize confusion and stress on the caregiver. Adequate nutrition, guided exercise, modification of expectations, and the creation of a more predictable, secure, and reassuring environment all help the patient and family in managing the illness. Much can be done to improve the quality of the patient's life, while maintaining function at the best of his or her capabilities. Support for the family and other caregivers also can improve the quality of life for all concerned.

Where Can the Family Get Help?

Caring for an Alzheimer's patient causes an extremely difficult energy drain on a family's physical, emotional, and financial resources. The changes in the patient's personality, behavior, mood, and self-sufficiency are difficult to accept, particularly because the patient is not always aware of sacrifices made in his or her behalf. Providing 24-hour supervision and care for a potentially helpless or suspicious patient can be very isolating and therefore very lonely. Because so few community members and professionals understand this disorder and its effects on families, professionals and family caregivers have joined with researchers nationally to establish the Alzheimer's Disease and Related Disorders Association, a national voluntary health organization dedicated to family support, education, and research.

Duke ADRDA Family Support Network is one of over 60 chapters of ADRDA nationally. All chapters and the national organization are working hard to fight this disease and help affected families in several ways:

Family Support: Since the Alzheimer's Family Support group started in March 1980, 23 local support groups have organized throughout North Carolina with Duke Aging Center assistance (see map on page 434). These groups have open monthly meetings providing a forum for family, friends, and health professionals concerned about patients with Alzheimer's and related disorders. Caregivers discuss mutual problems and share experiences, new ideas, caregiving tips, and individual coping techniques. Two thousand participants receive written and mailed information about medical care, nursing care, financial/legal planning, community facilities and programs, and research. Important consumer information is shared on day care or respite services which offer critical temporary relief to families facing total responsibility for care.

The chapter headquarters at Duke's Aging Center has a telephone hotline (684-2328) to help link newly interested caregivers with others close by in similar circumstances. Hotline callers also receive written information, telephone consultation, and an opportunity to talk and request information in time of crisis.

Public and Professional Awareness: The Duke ADRDA chapter and its affiliated local support groups sponsor program meetings with guest experts, audiovisual presentations, and workshops for community, civic, church and professional groups. Practical medical, legal, community service, and psychological information is offered to family and professional caregivers. The chapter also offers a speaker's bureau for church, community, or civic organizations requesting more information about Alzheimer's and its effects on families. The Chapter's central resource facility at the Duke Aging Center mails printed information, handles media features and publicity, circulates audiovisuals to local groups for program meetings, publishes a statewide newsletter, *The Caregiver*, summarizing local, state, and national efforts as well as tips for caregivers. Professional staff from the Aging Center plan and present continuing education workshops for health providers, nursing homes and hospitals.

Resources and Services Available to Victims and Families

Our country's legal, governmental, community, and financial institutions must become more responsive to the long-term care needs of Alzheimer's victims and their families. Duke ADRDA and its affiliate support groups encourage legislation for better, high-quality medical, social, and insurance benefits for patients and their caregivers. We encourage private and voluntary home health and nursing facilities to accept Alzheimer's patients and to redesign programs and services to suit Alzheimer's Disease victims' special needs.

Promotion of Research on Dementing Illness and Caregiver Effectiveness

The chapter supports and participates in research on local and national levels. We support biomedical research on the causes, treatment, and possible prevention of Alzheimer's Disease and related disorders as well as research on alleviating caregiver burden, and improving caregiver effectiveness.

On Eating Poison Ivy

Peter Heald, M.D., Claude S. Burton, M.D., and J. Lamar Callaway, M.D.

One of the most reliable crops this time of year in North Carolina is the Rhus toxicodendron* (poison ivy). The three-leafed menace in turn yields a bumper crop of Rhus dermatitis or more explicitly a contact dermatitis secondary to catechols in the poison ivy vine and leaf. Sharing the many lessons (outlined below) of poison ivy with patients has proved a rewarding part of managing this problem.

Contact dermatitis is a process that involves memory and stimulation of an immune response. The ability of some patients to revel in the Rhus vine without dermatitis is due to the inability of their recognition and memory systems to sound the alarm bugle of inflammation. Recent research on cutaneous inflammation pinpoints a certain cell network called the Langerhans cells as being the watchdogs of the skin. A testimony to its importance is seen in patients who eat poison ivy. These misguided few develop a peri-oral and peri-anal dermatitis but the mucous membrane does not react because of the relative absence of Langerhans cells on the surfaces.

The ability to safely ingest poison ivy has led to attempts to hyposensitize patients by using purified Urushiol which is one of the major antigenic compounds in poison ivy. The promotion of this in many nonmedical journals may prompt inquiries about it this season. Unfortunately, the oral hyposensitization regimens are not highly touted in the medical literature. Indeed, if patients desire something to swallow for poison ivy, a timely dose of Prednisone or antihistamines is more reliably effective than continuous dosing with the poison ivy catechol. Any effect noted with the oral derivative of poison ivy disappears when the hyposensitizer is discontinued. Thus, it does not cure.

The inflammatory properities of poison ivy have been utilized in a few conditions where contact dermatitis is desired. An example of this is in the treatment of warts (verruca vulgaris). One feature of that viral skin infection is that the immune system does not recognize the wart and hence does not mount an immune response to it. With a well placed stroke of poison ivy leaf the contact dermatitis response may also be directed against the wart.

Another feature of contact dermatitis is that similar reactions can occur with antigenically similar compounds. This type of cross reaction is seen with poison ivy also. Patients sensitive to Rhus will frequently react to cashew shells, mango rinds, and an oriental tree from which lacquer is derived. The latter produced an epidemic of buttock dermatitis in Western troops occupying Japanese territory after World War II.

One lesson we have all learned from contact dermatitis and poison ivy in particular is that linear lesions generally imply "an outside job." Almost all skin eruptions coming up from underneath have a circular or annular appearance, but almost all outside jobs have linear and geometric designs. This holds true whether the lesions are produced by contact with a passing poison ivy leaf or even self-induced ulcerations and mutilations. The presence of well-angulated or linear lesions may aid in the diagnosis of poison ivy but the lesions may not be so clear-cut. Frequently, the diagnosis may have escaped the patient and even the physician because of the atypical appearance and location. This is due to the property of the poison ivy antigen of being transported and setting up a contact dermatitis in areas that did not have initial contact with the leaf. Such ectopic lesions can be produced by contact with animals, especially pets who have been out in the vine. Another common cause of ectopic lesions is in patients who have had recognized contact with their hands. They may have scratched their ear or their nose, or pulled up their pants, generating ectopic lesions in areas that are not cleansed as often as the hands.

The management of poison ivy is best done in an aggressive fashion. This eruption is a self-limited condition with the exposure to the antigen usually terminated by the time of the presentation to the physician. Treatment should thus start immediately while the patient is in the doctor's office. Another factor that favors the aggressive treatment of this condition is that generally the people who develop this do not have other complicating illnesses or take other medications that may be interfered with by corticosteroids. For a purely inflammatory response, a purely anti-inflammatory treatment is indicated. Generally, Prednisone in doses of 1 mg/kg initially is quite effective. This can be tapered over the course of ten days to two weeks with good results. In the patient who may have questionable compliance or who may not be able to return for follow up, the single administration of intramuscular Triamcinolone (Kenalog I.M.) at approximately ⅔ mg per kg can also be quite effective.

For milder cases, and where systemic steroids are contraindicated, management may be accomplished solely with topical steroids. The most potent are generally the most indicated. For topical management to be successful, it must be applied at least twice a day. The potency of each preparation may be enhanced by using occlusion, and especially with poison ivy prone hands this can be done quite nicely with vinyl gloves. The most potent ones utilized for this are Cyclocort, Lidex, Topicort, Valisone, Uticort, Halog, Maxiflor, and Benisone.

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* A newer classification has proposed the use of Toxicodendron radicans in place of the Rhus classification used here.

Antihistamines such as Diphenhydramine, Hydroxyzine, Clemastine, and Cyproheptadine may be useful as adjuncts. Pruritis is best managed by an aggressive anti-inflammatory regimen. The presence of cloudy fluid in the blisters of poison ivy should lean one heavily toward suspecting secondary infection which is the major complication. When suspected or documented by gram stain and culture, this should be promptly treated with systemic antibiotics as there is no role for topical antibiotics in the management of impetigo and staphylococcal infections. Weeping lesions may also be managed with the adjunct of cool compresses such as using the time-honored Burrow's compresses or cool, diluted vinegar water. The latter is best prepared as a four-to-one dilution of grocery store vinegar. Compresses applied three to four times daily for up to twenty minutes are most soothing.

The soothing effects of a little education, a lot of interest, and an aggressive treatment will be most successful in managing this year's bumper crop of poison ivy patients.

Trimethoprim-Sulfamethoxazole

Charles A. Peloquin, B.S., R.Ph.

Trimethoprim-sulfamethoxazole (TMP-SMX) is a combination of two drugs designed to stop bacteria from growing. Both TMP and SMX were discovered during research by chemists. Because TMP and SMX are man-made drugs, they cannot properly be called antibiotics which, like penicillin, are natural products. However, both "antibiotics" and man-made "antimicrobials" are used to cure people of bacterial infections.

Sulfamethoxazole (SMX) is a modern derivative of the "sulfa drugs" used during World War II, and has been refined to eliminate or minimize some of the side effects seen with the older preparations. However, if you recall having an allergic reaction (such as a rash) to a "sulfa drug" some time in the past, be sure to notify BOTH your doctor and your pharmacist. Trimethoprim (TMP) is generally considered to be more potent at killing bacteria than SMX. It was discovered in the 1950s during screening for new drugs to treat malaria. Both TMP and SMX keep bacteria from making the building blocks for DNA and RNA, the genetic coding material of cells. Human cells, on the other hand, are nearly immune to the direct cell-stopping effects of these drugs. The reason that the drugs are combined is because they have an additive effect in the treatment of bacterial infections.

TMP-SMX is available from your pharmacist as Bactrim® from Roche Co. and Septra® from Burroughs Wellcome Co. A single strength tablet of either Bactrim® or Septra® contains 80 milligrams (mg) of TMP and 400 mg of SMX. A double-strength tablet, equal to two single strength tablets, is also available. The liquid suspension contains 40 mg of TMP and 200 mg of SMX in each 5 milliliters (ml), which is approximately equal to one teaspoonful. (NOTE: a TABLEspoonful, in contrast, is about equivalent to three TEAspoonfuls or 15 ml.) The liquid dosage form is particularly useful for children as well as anyone who finds it difficult to swallow tablets. A third form, an intravenous solution (for injection into a vein) is sometimes used in hospitals.

Trimethoprim-sulfamethoxazole is used to treat a variety of ailments. It is very effective in certain types of urinary tract infections (UTIs), particularly in women with recurrent UTIs. A condition known as otitis media or middle ear infection, which usually occurs in children under eight years old, can also be treated with TMP-SMX. Other infections, located in the blood, the lungs, or the intestines may also be cured with these drugs. However, there are several other drugs that may be used, and your doctor will make a choice based on your condition, your history of drug allergies, and the tests he or she performs. If your doctor prescribes TMP-SMX (Bactrim® or Septra®) for yourself or a family member, have the prescription filled immediately. Be sure to tell your pharmacist about any drug allergy that you might have. TMP-SMX is usually taken two times a day, approximately twelve hours apart. The drugs are most effective if taken an hour before or two hours after meals. It is important that you finish all the medication prescribed for you, even if you feel better before it is all gone. Most people tolerate the drugs quite well. However, a few patients (around 5 to 7% of all those treated) may experience adverse (unwanted) reactions. Skin rashes, which may be red, bumpy, or itchy, or urticaria (hives) are the most common side effects in allergic patients. Some people may experience stomach upset. If you have a history of anemia, notify your doctor and supply him or her with as many details as possible. If you experience any of these symptoms while taking TMP-SMX, notify your doctor or pharmacist as soon as possible. Though some people experience discomfort due to the drugs, few people need to stop therapy before completion.

Trimethoprim-sulfamethoxazole is a safe and effective drug combination used to treat bacterial infections. It offers the convenience of twice daily dosing, and is available in a variety of dosage forms to suit individual needs.

From the Department of Pharmacy, Duke University Medical Center, Durham, NC 27710.

Carolina History — Current

Hang Gliding Injuries

Charles S. Davidson, M.D.

The injuries sustained while participating in the sport of hang gliding were reviewed by analyzing the charts at an emergency department near a high volume gliding area. The emergency department was located within one mile of Jockey's Ridge Dune on the Outer Banks of North Carolina. This large sand hill, varying in height from a few feet to a maximum of 120 feet, is a popular launching site for pilots of all skill levels. A busy school for gliding operates at the base of the dune, and it instructed approximately 5000 pilots in 30,000 to 40,000 launches in the year studied.

Table 1
Hang Gliding Injuries

Age	Sex	Injury	Mechanism of Injury
		Head, Face and Neck	
23	M	laceration of upper lip	struck control bar on landing
34	M	laceration of nose	struck wire on glider on landing
25	M	laceration and fracture of nose, laceration of lip	struck glider on landing
28	F	laceration of lower lip, chipped tooth	struck glider on landing
25	F	fracture of nose	struck glider on landing
20	M	laceration of lower lip	struck glider on landing
23	M	laceration of upper lip, chipped teeth, * bilateral fractures of distal radius	uncontrolled landing
32	M	† laceration of upper lip	struck glider on landing
19	F	fracture of nose	struck control bar on landing
		Upper Extremity	
27	M	dislocation (anterior) of right shoulder	uncontrolled landing
27	M	dislocation (posterior) of right shoulder	uncontrolled landing
25	M	fracture left proximal humerus	uncontrolled landing
36	M	comminuted fracture of right humerus	uncontrolled landing
26	F	fracture left humerus (distal)	struck control bar during uncontrolled landing
15	M	fracture olecranon epiphysis	uncontrolled landing
19	M	laceration of left forearm	uncontrolled landing, struck wire on glider
28	M	fracture of left distal radius	uncontrolled landing
32	M	fractures of left distal radius and ulna	uncontrolled landing
30	F	fracture of right distal radial styloid	uncontrolled landing
28	F	fracture of left radius (Colles')	uncontrolled landing
13	M	fracture of left distal radius	uncontrolled landing
20	F	fracture of right radial styloid	uncontrolled landing
23	M	* bilateral fractures of distal radius	uncontrolled landing
25	M	comminuted fracture of left ulna	uncontrolled landing
40	M	compound, comminuted fracture of fifth phalynx, left hand	caught on wheel of glider
		Lower Extremity	
26	F	contusion of right upper leg	uncontrolled landing
37	M	hamstring muscle strain	running with glider
32	F	contusion upper leg	uncontrolled landing
26	M	laceration of left lower leg	struck glider on uncontrolled landing
22	M	abrasion of right lower leg	struck wire on glider
		Chest and Back	
51	M	lumbosacral strain	strained back getting out of glider harness
32	M	† costachondral separation	chest pain following strain while lifting glider
		Fatality	
?	M	probably cervical spine injury (no autopsy performed)	crashed glider from 100 ft. altitude

* lip injuries and fractures occurred in same accident
† same patient, injuries occurred on two separate occasions

From Spectrum Emergency Care, Inc., 999 Executive Parkway, St. Louis, MO 63141.

The glider predominantly used at this site is the Rogallo design wing, with the pilot lying in a prone position in a harness during flight. A horizontal control bar is held with the palms down in front of the pilot. Takeoff is initiated by running into the wind until lift is obtained, and landing is ideally made by pushing the bar outward until lift is lost at a point just off the ground. The pilot's legs are rotated down at that moment to land in the upright position.

The earliest documentation in the medical literature cites eight case studies of hang gliding accidents in Colorado during 1973-74.[1] Injuries included 10 lower extremity fractures; three upper extremity fractures; two cases of multiple rib fractures; and one cerebral contusion.

In 1975, Yuill reviewed 70 hang gliding accidents reported to the British Hang Glider Association.[2] His data revealed 14 fractures of the upper extremity and six fractures of the lower extremities.

Seventy-five glider accidents occurring in the Austrian Tyrol from 1973 to 1976 were analyzed by Margreiter and Lugger.[3] Their data demonstrated a predominance of lower extremity fractures (27), and 21 upper extremity fractures. In addition, 14 contusions, three skull fractures, and five cases of major abdominal trauma were noted. Most pilots in this study were suspended under the glider in the sitting position during flight.

All patient charts from the emergency department during the months May through September of 1979 were reviewed for hang glider injuries. Age, sex, injury, and mechanism of injury (as reported by the patient) were recorded. Officials of the local glider school estimated that 90 percent o all flights for the year were made during the months surveyed.

Thirty charts revealed glider related injuries (table 1) The most common fractures were those of the upper extremity (15), with fractures of the distal radius and ulna the most numerous (10). These injuries all occurred during uncontrolled landings, with the exception of one phalynx fracture. A large number of facial injuries were related to the face striking the glider structure during uncontrolled landings.

There were no major chest or abdominal injuries. There was, however, one fatality. The pilot lost control of the glider and crashed from a height of approximately 100 feet above the sand. The cause of death was presumed to be cervical spine injury.

The proportion of injuries to number of flights occurring at this locale appears quite low. The soft landing areas, unobstructed field of flight, and steady winds (Orville and Wilbur Wright selected this area for the same reasons) are probable safety factors. However, the uncontrolled crash from altitude can cause major injuries regardless of the gliding area.

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Carolina History — Past

Deryl Hart: Leader in the Development of the Duke University Medical Center

David C. Sabiston, Jr., M.D.

With the passage of time and reflection upon the origin of the Duke University Medical Center, it has become increasingly apparent that of its founders none deserves greater recognition than Deryl Hart. He served for more than 30 years as Professor of Surgery and Chairman of the Department, and was then appointed President of the University by the Board of Trustees. In addition to creating a strong Department with primary emphasis upon *excellence* in clinical surgery, Dr. Hart turned his innovative mind to the structuring of the Private Diagnostic Clinic, a concept that has since become the foundation upon which the Duke University Medical Center is based and one that has also served as a model for many similar institutions throughout the nation. Together with Wilburt C. Davison and Frederic M. Hanes, Deryl Hart was a key figure in this triumvirate which within a very short time placed Duke among the foremost medical centers in the nation.

Several years before his death, in response to a reporter's question concerning his philosophy of life, Deryl Hart replied, "Set your goal *high*, if you think you can do it, and *finish* what you start." In this succinct statement, he embraced a life-long emphasis upon *hard work* and in a unique way related the pleasures and rewards that it brought. It was obvious from the beginning that he had set high standards for himself, and his entire life was an example of the admirable completion of each goal he set. Born of industrious parents in Beuna Vista, a cotton-growing region in Georgia, he went to Emory University and graduated cum laude with election into Phi Beta Kappa. After receiving a masters degree in mathematics, he entered the Johns Hopkins Medical School and achieved an outstanding record, graduating in the class of 1921. His dedication to hard work and achievement was rewarded by being selected for one of the highly coveted internships in surgery under William Stewart Halsted, generally recognized as America's greatest surgeon of this century. He progressed upward through the program, ultimately becoming Chief Resident.

It is interesting to reflect upon the method by which Deryl Hart was chosen to be the first Professor and Chairman of the Department of Surgery at Duke. By his own account, while in his second year of Chief Residency at Johns Hopkins, he was approached in the hospital corridor by the Chief of Otolaryngology, Dr. Samuel J. Crowe, who invited him to his home for dinner. During the evening Dr. Crowe casually mentioned the new medical school being built in North Carolina as a result of a generous gift from the famed industrialist, James Buchanan Duke. He asked whether or not Dr. Hart might have an interest in being Chief of Surgery. Sometime earlier, Dr. Hart had agreed to remain on the faculty at Johns Hopkins and therefore wished to give the matter additional thought before responding. A week later, another invitation came from Dr. Crowe to come for dinner, and that evening Dr. Hart expressed a definite interest in the position. Shortly thereafter, Dean Wilburt C. Davison offered him the position of Professor and Chairman of the Department of Surgery, an offer he accepted on March 9, 1929 at the age of only 35. In this decision he had the strong support of Dean Lewis, the Surgeon-in-Chief at Johns Hopkins, as well as that of the noted John M. T. Finney. It is interesting, however, that the Director of the Hospital, Winford M. Smith, strongly advised him to remain at Hopkins, saying that the many hospitals being developed in the Carolinas through the Duke Endowment would prevent sufficient clinical material being referred to Durham, and further commented that it would be "easier for you to obtain private patients from North Carolina at Hopkins than at Duke."

The Duke Hospital was opened on July 21, 1930, and the following day Dr. Hart did the first operation, performing bilateral repair of inguinal hernias on a 72-year-old patient. He later emphasized the low cost of hospitalization in the early days with the average daily cost per bed at Duke Hospital in 1936 being $4.57, and somewhat apologetically added there was a "subsequent gradual rise to $5.73 per day by 1942."

Shortly after his arrival at Duke, in the midst of the Great Depression, Dr. Hart together with Dean Davison and Frederic Hanes, Professor and Chairman of the Department of Medicine, laid the foundations for the development of the Private Diagnostic Clinic. The basic principles upon which the Clinic was established were that all clinical appointments in the University would be on a part-time basis and that each Department would develop its own geographic full-time clinical faculty. Moreover, each Department would have maximal independence as long as cooperation for the general development for the Medical Center was maintained. As a result of that careful and thoughtful plan, these principles remain in effect to this day, and the contributions to the University Medical Center from the private practice of its faculty have been vital in the

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From the Department of Surgery, Duke University Medical Center, Durham, NC 27710.

development of the Hospital and Medical School. As one example, through their Building Fund and departmental contributions, the clinical faculty at Duke provided 10 million dollars toward the construction of the new University Hospital. In addition, some 2 million dollars is currently contributed annually toward the Medical Center Building Fund by the clinical faculty.

Dr. Hart was respected not only in the Department of Surgery, but throughout the entire Medical Center, and indeed the country. Shortly after his arrival, one of the new members of the faculty in the Department of Medicine, who had been recruited from Harvard, said, "I know of nobody in Boston within 10 years of his age whose opinion I would rather have on any surgical condition." Of that early era, one of his Chief Residents was later to write, "I wish to acknowledge on behalf of our group the fine example of craftsmanship and sound surgical judgment and knowledge personified by Dr. Hart. During his active teaching days, which corresponded to my period of training, he was the one surgeon that the staff looked to as the example of how a surgical procedure should be properly carried out. In endeavoring to emulate his technique, I am sure we all became much better surgeons. His vast fund of knowledge of surgery and recall was a source of awe, as well as an inspiration." The faculty were also aware of his immense contributions and one summarized by saying, "Dr. Hart literally devoted his life to the development of this School and his Department, combining qualities of leadership, surgical skill, business acumen, personal integrity, and judgment, and an ability to pick an able staff, to build one of the leading Departments of Surgery in this country."

In 1960, Duke University found itself in a difficult administrative controversy, and Dr. Hart responded to the Trustees' call that he lead the institution as President through that turbulent era. As a result of his determination, his sound judgment, and hard work, he rapidly reversed the divided campus and firmly united it. With a series of bold strokes, he greatly enhanced the character and image of Duke throughout the nation. Under his leadership, faculty salaries quickly rose to rank among the top few universities in the nation, and the number of Distinguished Professorships was doubled. Fortunately, his masterful achievements were recognized at the time, and one of the senior Trustees confidently commented, "I believe there is *no one* who, during the particular time Dr. Hart served as President, could have accomplished so much for the advancement of Duke University."

At the time of his appointment as President of Duke University, *The News and Observer* interviewed Dr. Hart and quoted him in its "Profile of a Tarheel" as saying that he originally came to Duke because ". . . I wanted to help build the medical school — its future looked bright, and so I decided to make my future with the school. After coming here, I found that my confidence was justified. After I once started here, I knew that I would rather stay here than go anywhere. . . . Everyone has been cooperative and is pulling together. They help me to meet the problems as they arise and get me through, somehow." It was in this milieu that Deryl Hart built a strong clinical surgical service, developed in an extraordinary way the specialties of surgery at Duke, organized an outstanding residency program, and trained a number of leading practitioners of surgery as well as a distinctive group in academic surgery.

Later in his life, Dr. Hart said, "In retrospect, it is my opinion that if I have made any contribution to the development of this Medical Center and to the Department of Surgery, it is based upon my complete freedom and encouragement to think, to plan, and to propose and then to receive the support of the Dean in decisions to act."

All who know the full story of Deryl Hart's success recognize the very supportive and highly important role played by Mary Johnson Hart, his wife for half a century. Dr. Hart himself acknowledged this fact in the introduction to his book "The First Forty Years at Duke" when he said, "This book is dedicated to my wife, Mary Johnson Hart, whose encouragement, suggestions, and help account for many of the accomplishments for which credit has been given to me." Their wide circle of friends has long recognized and admired the close family life of the Harts at their beautiful home at 2324 Duke University Road. Their six children have all done exceedingly well and have brought the Harts 24 grandchildren. Mary Hart, together with the children, Deryl, Jr., Elizabeth, John, Julia, William, and Margaret, continues in the tradition of this great family.

As Deryl Hart's close colleague and friend of many years, Clarence E. Gardner, said of him posthumously, "It is impossible to know the extent of Dr. Hart's influence on the thousands who knew him, his patients, his students, the residents whom he trained, his staff, and the University community. His life will surely carry on in the lives of many of them. Certainly his life leaves a permanent imprint on his Department and on Duke University."

Finally, as was said of him at the Memorial Service held in the Duke University Chapel shortly after his death in June 1980, "As we reflect upon this man, and this hour, we recognize and cherish all that he leaves us. These combine to assure his continuing presence as his shadow lengthens into the future, as surely it will."

The Editor wishes to comment:

As Professor of Medicine and chairman of the department, I worked closely with Deryl Hart from 1947 through 1961. He was a great man whose achievements were never fully recognized by many of our leaders in Surgery. He devoted his talents to Duke and North Carolina. He was always available. He put the interest of the institution above his own. He showed unusual surgical judgment and technical skill. One of his residents once remarked that at first he thought his Chief was unusually lucky but in time he had to admit that one just couldn't be lucky all the time. Hart had no sense of jealousy. He pushed his young men to achieve natural eminence and enjoyed vicariously all their honor. Once I lost my cool and wrote a letter to Deryl implying that he was placing the interests of himself and Surgery above those of the institution. He replied that he had destroyed the letter and that he thought that on reflection I would destroy the copy in my file. I did and the incident was never mentioned again.

I am pleased that his successor, David Sabiston, has written this paper which might have been entitled "Deryl Hart, A Great Man To His Colleague, Gene Stead."

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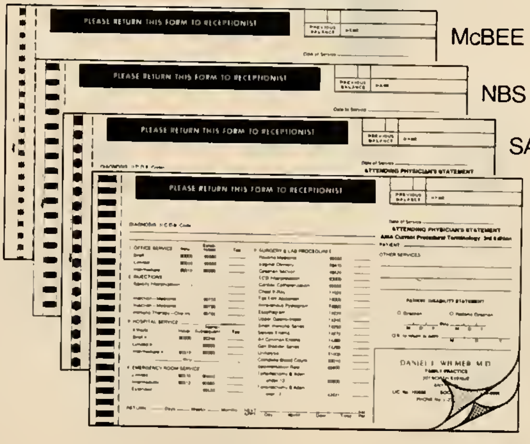
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Things Most of Us Don't Know

Ectopic Pregnancy Surveillance

Sally F. Dorfman, M.D., M.S.H.S.A.

Ectopic pregnancy is an important cause of maternal mortality in the United States. However, no comprehensive national statistics on ectopic pregnancies have been obtained in routinely collected data. This report summarizes data on ectopic pregnancy among females 15-44 years of age, documenting the estimated number and characteristics of females discharged from hospitals after treatment for ectopic pregnancy and describing the characteristics of females who died from this condition.

In the period 1970-1978, approximately 261,600 females ages 15-44 were discharged from United States hospitals with a diagnosis of ectopic pregnancy. For every 1,000 reported pregnancies during that period an estimated 7.1 were ectopic. The number of reported ectopic pregnancies steadily increased from 17,800 in 1970 to 42,400 in 1978 (table 1). The ectopic pregnancy rate also increased each year, regardless of which of three denominators (female population ages 15-44, live births, or reported pregnancies) was used. For each denominator, the rate more than doubled in the period 1970-1978.

Although 437 females died because of ectopic pregnancy in the period 1970-1978, the mortality rate declined during this period from 32.5 to 0.9 deaths per 1,000 ectopic pregnancies. This trend was generally true for each age group. However, for each age group and region, the ectopic pregnancy mortality rates for black females were higher than those for white females. Mortality rates by month ranged from 0.9 (April) to 2.3 (January), with an overall rate of 1.7 deaths per 1,000 ectopic pregnancies.

Technologic changes have probably decreased the risk of death from this condition. Progressively more sensitive pregnancy tests, ultrasound examination, and laparoscopy have contributed to a higher likelihood of accurately diagnosing an ectopic pregnancy and diagnosing it earlier. Greater awareness of ectopic pregnancies on the part of females and health-care providers has also probably contributed to a heightened likelihood of obtaining an accurate diagnosis of ectopic pregnancy. Shorter stays for treatment of ectopic pregnancy may have resulted from earlier intervention and less extensive treatment for unruptured ectopic pregnancies.

TABLE 1
Numbers and Rates of Ectopic Pregnancies, by Year, United States, 1970-1978

		Rate		
Year	Number	Females 15-44[1]	Live Births[2]	Reported Pregnancies[3]
1970	17,800	4.2	4.8	4.5
1971	19,300	4.4	5.4	4.8
1972	24,500	5.5	7.5	6.3
1973	25,600	5.6	8.2	6.8
1974	26,400	5.7	8.4	6.7
1975	30,500	6.5	9.8	7.6
1976	34,600	7.2	11.0	8.3
1977	40,700	8.3	12.3	9.2
1978	42,400	8.5	12.8	9.4
Total	261,600	6.3	8.8	7.1

[1] Rate per 10,000 females.
[2] Rate per 1,000 live births.
[3] Rate per 1,000 reported pregnancies (live births, legal induced abortions, and ectopic pregnancies).

Extracted from Centers for Disease Control: Surveillance summaries. February 1983;32(Suppl. 1):19SS-21SS.

Business As Usual

John H. Felts, M.D.

Members of this Society who can remember when every community of any size in the state had a livery stable also recall that venereal disease wasn't talked about, at least in polite society, in those days. It wasn't genteel and served no useful purpose. Doctors had to know something about such matters but they were different. Because patients with syphilis were numerous on the wards of many teaching hospitals, courses devoted to that disease alone were offered in some schools and fraternity songs were replete with such phrases as "It started with a mucus patch." One of the standard texts on the subject was Kampmeier's *Essentials of Syphilology*[1] which told all or almost all that wasn't spelled out about sexual congress, a favorite euphemism of the era, in the many pictures of primary lesions.

From the Department of Medicine, Bowman Gray School of Medicine, Winston-Salem, NC 27103.

The military was quite concerned about the problem too and raw recruits entering service in World War II were exposed to gruesome movies about the ways of fallen women and of the men they pulled down with them. These gorgeous creatures, serving as spies for the enemy, spread venereal disease among enlisted men and learned about military secrets. Troops were warned by posters showing siren and soldier and told that "loose lips sink ships." And all the young men were warned that one night with Venus meant the rest of their days with mercury. Sometimes it was difficult to know whether the enemy was the Axis or the spirochete. But rapid treatment centers where penicillin could be administered daily for a week or so changed all that, cleansing victims of the disease and of moral blight as well. Syphilis is now a minor problem, at least demographically, although rates have increased somewhat of late,[2] and diagnostic serologic tests are no longer legally required of hospitalized patients in North Carolina.

Before penicillin, therapy was certainly less than satisfactory. The effectiveness of bismuth was justifiably questioned and arsenic often brought horrifying side effects so that there was once a real need for knowing the natural history of untreated lues. So a U.S. Public Health Service project, carried out from 1932 to 1972, was designed to provide the necessary data but badly miscarried because participants were denied the benefits of treatment with penicillin years after its efficacy had been demonstrated. The whole sad story has been accurately and movingly, if somewhat self-righteously, told by James H. Jones in a recent book appropriately entitled *Bad Blood*.[3] The experiment carried out at Tuskeegee in Alabama hardly found doctors playing God or science going mad, as is asserted on the dust jacket, but it was poorly designed, wasteful, inadequately supervised and obviously unethical. The whole project, a tragic exercise in moral indifference, did in its collapse aid in the development of measures to define patients' rights, to assure informed consent and to prevent repetition of such egregious proceedings.

Contrast our national reaction to the Tuskeegee fiasco and our muted response to a recent commercial event called to our attention in a Hastings Center Report.[4] It seems that whorehouses are legal in parts of Nevada, but their ownership is patriotically restricted to American citizens. In 1982 three such establishments in Winnemucca, Nevada, were sold by a French woman who as a madam was a deportable alien. They were purchased from her by a syndicate of California doctors who put up $2.5 million for the privilege. The broker responsible for the transaction said "it makes a lot of sense, financially." Thus, the doctor as economic man. Will members of the organization rotate night call? Will the FTC insist that the doctors advertise? Could the new owners be charged with solicitation in North Carolina? If the good doctors pass the inspection by the police in Nevada, the license to operate the establishment will be transferred to them and their names made public.

References

1. Kampmeier RH: Essentials of Syphilology. Philadelphia: JB Lippincott Company, 1944:539 pp.
2. Syphilis trends in the United States. MMWR 1981;30:441-447.
3. Jones JH. Bad Blood New York. The Free Press, 1981:272 pp.
4. Hastings Center Report, 1983;13(1):3

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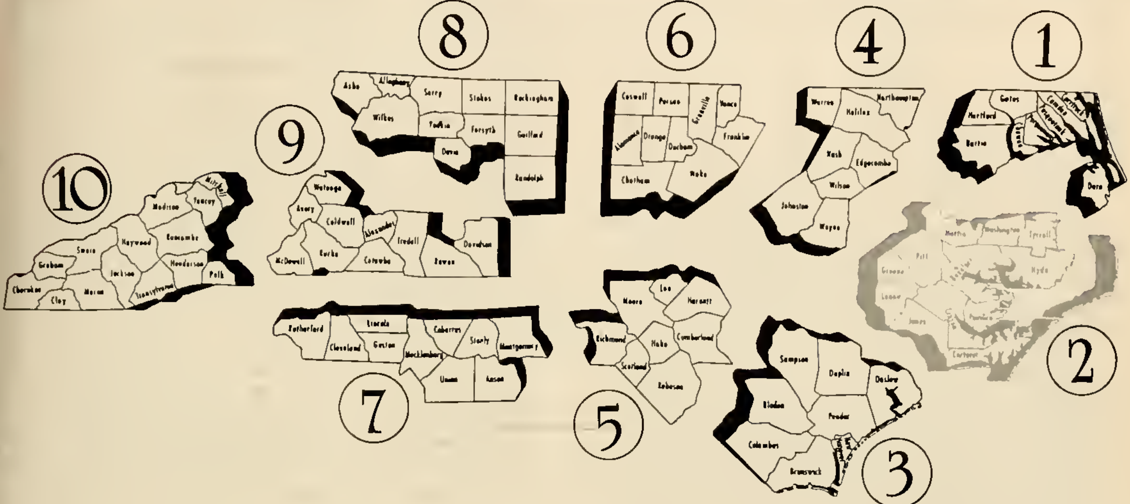
Councilor's Report



From the Trees to the Forest

A. L. Ferguson, M.D.

When I started my rounds of attending meetings with each of the five county societies in the Second Medical District last fall, I introduced myself to them as their new Councilor and then made an effort to explain the role of a Councilor. After getting into my spiel, it became obvious to them and me that neither of us knew what the role of a Councilor was. Five such attempts had the same result. To date, no official mandate exists outlining the duties of a Councilor. Apparently, through the years, Councilors have relied upon their own ingenuity to function in their executive capacity. Currently the Medical Society headquarters is in the process of designing guidelines to meet this need.

Early on, after being elected Councilor in May 1982, I waited for calls or letters from Second District members to act upon as Councilor. None came! I developed a simple research project to compare membership statistics of the Second District with those of other districts in the State just to see how we in the Second District "stacked up." (There are 100 counties, 79 county medical societies, and 10 medical districts.) Some of the statistics compiled in this project can be found in table 1. It was nice to see that the Second District, though sixth in size, was first in percentage of membership in each of the three societies: county, state, and AMA. The largest district — Sixth — was last in all three memberships across the board. I have made no conclusions from this study, but I found the data revealing and thought it worthwhile to pass on to those interested.

John W. Foust, M.D., First Vice-President and Chairman of the Committee on Membership of the North Carolina Medical Society this last year, enrolled all councilors and vice-councilors, via Executive Council decree, as acting members of his committee. In that capacity, I have succeeded in browbeating our five county societies into appointing a Membership Committee in each of our county groups — a first down our way. Maybe the Second District will be first in recruiting 100% membership in the State. We are already at 80%.

The highlight of all activities in the Second District since last July occurred in January in Greenville at our annual Second Medical District Society meeting where Dr. Jim Davis presented our program. Jim eloquently described the makeup, function and direction of the AMA. He was convincing in his reasoning why we all should support our county, state, and national organizations. Jim has a way of making hard tasks seem simple.

As far as the duties of Councilors are concerned, Bert Williams, M.D., Councilor of the Third District, said at one of our Executive Council meetings last year in effect, "Our main objectives are: first, to represent our districts (constituent physician members) to the Executive Council and, second, to apprise our districts of what our Executive Council — and the Society — are doing at the state level." I agree with that. What bothers me most, though, is getting a picture of the Society as a whole.

Table 1
North Carolina Physicians by Districts

District	Total MDs	Percent of Membership		
		County	State	AMA
First	128	58	58	40
Second	569	82	80	62
Third	436	65	63	47
Fourth	431	71	67	46
Fifth	595	61	58	43
Sixth	2605	54	52	36
Seventh	1234	76	71	54
Eighth	1673	66	63	46
Ninth	670	73	69	48
Tenth	758	59	53	39

In my 13 years of association with the North Carolina Medical Society, I have had significant mental struggle in an effort to appraise its structure and function. I have been obsessed with the idea that no organization can be as complex as our Society seems, and with time I had hoped the veritable "trees" in the Society would take on a more comprehensive form, evolving at last into a single and homogeneous "forest." I have observed much kinetic energy spent on the perpetual enhancement of the Society itself and, though such effort is germane to our survival, it is easy in the midst of it all for some of us to get lost. As a tree gazer lost in this maze, I wondered what percent of our Society's effort is spent on the main goal and what percent is spent on second needs. Lastly, which activity is the main goal?

Since becoming Councilor of the Second District, I felt prompted to get my "mess" straight lest someone discover my weakness. In meetings with our district societies and realizing my weaknesses, as well as theirs, I began to read more and ask more questions. During these efforts in search of strength, I found more tree gazers than forest appreciators in our Society's midst than I formerly anticipated. The farther I looked beyond the Executive Council, commissioners and committees, the more tree gazers I found. (Though I am suspicious some are in those groups as well.) Consequently and admittedly, I felt less ill at ease being a tree gazer. Unfortunately, however, I am forced to conclude — and am convinced — an unwieldy number of our Society's membership has little appreciation for the significance of our North Carolina Medical Society.

Thinking more, and after hearing Jim Davis, I feel that I may see a form on the horizon taking shape more and more like a forest. (It has been there all along.) That is, it seems the main goal our Society should aim for is to serve as an unselfish and respected force which creates and maintains dictums that properly influence the standards and delivery of health care to all the citizenry. Although differences exist in our ranks, we have a forum (The Society) where these differences can be shaped into a composite force of principles with which we, better than any other group, can guide and shape the future of health matters through the testy times ahead. It is axiomatic that our organization will be only as effective as are its constituents. Until every member is made cognizant of these truths, our strength will lie dormant, or near so, out amongst the tree gazers.

I now believe I may know what a Councilor should be doing. Now all I have to figure out is how to function like one.

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Radiology and Imaging at Duke University Medical Center

Charles E. Putman, M.D., and David F. Merten, M.D.

Radiology at Duke University Medical Center had its beginning in 1929. During the more than 50 ensuing years, both the Medical Center and the Department of Radiology have grown with a commitment to research, education, and service to physicians in North Carolina and surrounding areas. With the opening of Duke North Hospital in 1981, the Department of Radiology expanded to occupy almost 100,000 square feet of space within Duke University Medical Center. Today, with over 50 full-time faculty members in both diagnostic imaging and radiation oncology, Duke radiology stands among the foremost academic departments in the United States. Members of the department in clinically oriented specialty areas work closely with specific imaging specialists to correlate the course of diagnostic imaging, working with the patient's physician to facilitate the most efficacious approach to diagnosis and treatment.

The department has assumed a major role in development and evaluation of innovative imaging approaches to diagnosis including nuclear magnetic resonance (NMR) and positron emission tomography (PET). Using a multidisciplinary approach involving a number of medical specialties, a center for metabolic imaging is being developed. Similarly, a fetal diagnostic unit is currently being formed in partnership with the Department of Obstetrics and Gynecology to provide early recognition and therapy for abnormalities in the fetus as well as placenta and uterus.

The cardiac diagnostic unit, already in operation at Duke University Medical Center, has brought together specialists and technology from medicine, surgery, biomedical engineering, and radiology to evaluate and diagnose cardiovascular disease. The purpose is to provide the referring physician with technological diagnostic advances reinforcing the knowledge and relationship of the patient and his private physician.

In an ongoing effort to expand the service commitment to physicians and patients in surrounding areas, the radiology department has implemented consultation services to physicians desiring information regarding radiological approaches to diagnosis and treatment of their patients. Consultation may be obtained Monday through Friday, 7:30 a.m. to 5:30 p.m. by calling 919/684-3403 (diagnostic imaging) or 919/684-3805 (radiation oncology). At other times, calls should be directed to 919/681-2711. The consultation service is intended as an adjunct to imaging and therapeutic facilities locally available and as an educational service to physicians desiring information regarding application of imaging modalities and interventional techniques, as well as radiation therapeutic procedures.

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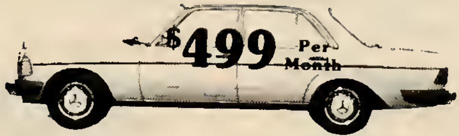

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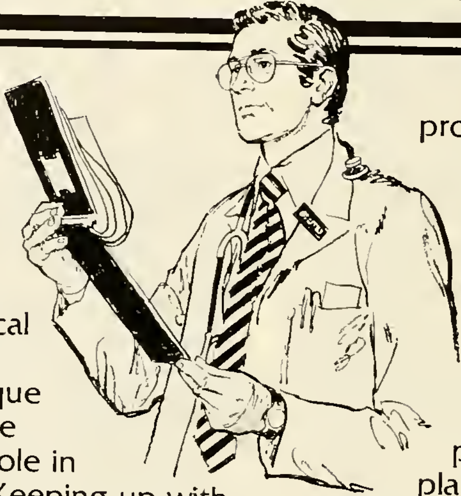

A doctor's study of medicine doesn't end with medical school. Every medical advance or new technique redefines the physician's role in some way. Keeping up with these constant developments is part of being a doctor.

Times do change...and this is especially true in the field of medicine.

Yet, there are some things in life that don't change. Accidents and serious illnesses still happen unexpectedly. And financial hardship often follows — especially if you're kept away from work for a while.

For that reason, Disability Income Protection for younger doctors was developed. As a member of the North Carolina Medical Society, you are eligible for this important protection which can help replace lost income if a covered accident or illness keeps you from your practice.

The regular monthly benefits payable under this plan may be used to cover any expenses you decide on — medical bills, groceries or even car payments.

If you are under the age of 55 and active full time in your practice, find out more about this valuable protection by contacting your local Mutual of Omaha representative. At no obligation, you will receive full details of coverage, promptly and courteously.

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IN STATE

August 17
"Cardiovascular Disease: Risk Reduction Strategies"
Place: Sanford
Credit: 2 hours
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

August 18-19
"Approaches to the Treatment-Resistant Psychiatric Patient: An Analysis of Failures and Successes"
Place: Asheville
Fee: $50-90
Credit: 12 hours Category I
Info: Forrest Smith, Box 3253, Duke University Medical Center, Durham, NC 27710. 919/684-5050

August 23
"Records and Other Necessities"
Place: Asheville
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

August 27
"Geriatric Education Day"
Place: Raleigh
Credit: 6 hours AAFP
Info: NC Academy of Family Physicians, Box 20146, Raleigh, NC 27619. 919/781-6467

September 1
"Malpractice Awareness — Stat"
Place: Raleigh
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

September 11-15
"Clinical Skills Workshops and Review"
Place: Winston-Salem
Fee: $360 ($200 for residents)
Credit: 31 hours AMA, AAFP
Deadline: August 25, 1983
Info: Robert B. Taylor, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4450

September 13
"Critical Care Medicine: Initial Triage and Management"
Place: Fayetteville
Credit: 5.5 hours AAFP
Info: Mrs. Mary Henley, Fayetteville Area Health Education Foundation, Inc., Box 64699, Fayetteville, NC 28306. 919/323-1152

September 15-16
"Fifth Annual Health Law Forum: Antitrust Impact on Medical Staffs"
Place: Greenville
Info: Bonnie Partin. 919/872-2830; in NC call 800/662-7403

September 19-November 11
"Postgraduate Course in Sonic Medicine"
Place: Winston-Salem
Credit: 35 hours per week Category I AMA
Info: James F. Martin, M.D., Center for Medical Ultrasound, Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4505

September 21
"Surgical Infections"
Place: Durham
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

September 21
"Wellness in the 80's"
Place: Sanford
Fee: $15
Credit: 4.5 hours Category I AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

September 29-October 2
"Diseases of the Upper Urinary Tract"
Place: Pinehurst
Credit: 16 hours Category I
Info: Linda Mace, Box 3707, Duke University Medical Center, Durham, NC 27710. 919/684-2033

September 30-October 1
"Changing Concepts in Reproductive Endocrinology and Infertility"
Place: Chapel Hill
Info: W. B. Wood, M.D., 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2112

October 1-2
"Practical Dermatology for the Non-Dermatologist"
Place: Asheville
Info: W. B. Wood, M.D., 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2112

October 3
"Perinatal Medicine Symposium"
Place: Durham
Credit: 7 hours Category I
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

October 3-7
"Microsurgery Workshop"
Place: Durham
Info: Donald Serafin, M.D., Box 3372, Duke University Medical Center, Durham, NC 27710. 919/684-3347

October 5
"Initial Treatment in Hypertension — New Concepts"
Place: Durham
Info: J. C. Gunnells, M.D., Box 2991, Duke University Medical Center, Durham, NC 27710. 919/684-5038

October 7-8
Ocular Surface — Contact Lens Symposium"
Place: Atlantic Beach
Info: Carol Vilas, Box 3802, Duke University Medical Center, Durham, NC 27710

October 7-9
"Second UNC Symposium on Sarcoidosis"
Place: Chapel Hill
Info: W. B. Wood, M.D., 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2112

October 14-15

"Davison Club Weekend"
Place: Durham
Info: Janet Sanfilippo, Box 3407, Duke University Medical Center, Durham, NC 27710. 919/684-6347

October 18

"Malpractice Awareness — Stat"
Place: Asheville
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

October 19

"Cerebrovascular Accidents, Acute Care and Rehabilitation"
Place: Sanford
Credit: 2 hours Category I AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

Out of State

August 14-18

"Emergency Management of the Critically Ill"
Place: Hilton Head, SC
Fee: $310 ($410 nonmember)
Info: American College of Physicians, 4200 Pine Street, Philadelphia, PA 19104. 215/243-1200

August 26-28

"Medical Malpractice Seminar"
Place: Hot Springs, VA
Fee: $220 (SMA members), $275 (nonmembers)
Info: Jeanette Stone, Southern Medical Association, Box 2446, Birmingham, AL 35201. 205/323-4400

September 19-23

"Recent Advances in Internal Medicine"
Place: Nashville, TN
Fee: $310 ($410 nonmember)
Info: American College of Physicians, 4200 Pine Street, Philadelphia, PA 19104 215/243-1200

September 27-29

"Consensus Development Conference on the Treatment of Hypertriglyceridemia"
Place: Bethesda, MD
Info: Peter Murphy, Prospect Associates, 2115 East Jefferson Street, Suite 401, Rockville, MD 20852. 301/468-6555

October 7

"Selected Topics in Pediatrics"
Place: Norfolk, VA
Info: Jean E. Shelton, M.D., 800 W. Olney Road, Norfolk, VA 23507. 804/628-3798

October 13-14

"Medical Malpractice Seminar"
Place: Arlington, VA
Fee: $220 (SMA members), $275 (nonmembers)
Info: Jeanette Stone, Southern Medical Association, Box 2446, Birmingham, AL 35201. 205/323-4400

October 15-22

"Diving Accident and Hyperbaric Oxygen Treatment"
Place: Grand Caymen Island, West Indies
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

October 18

"Antimicrobial Therapy of Life-threatening Infections"
Place: Bristol, VA
Info: Raymond Massengill, Bristol Memorial Hospital, 209 Memorial Drive, Bristol, TN 37630. 615/968-1821

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North Carolina Medical Society Auxiliary

Auxiliary President's Remarks to the House of Delegates Pinehurst, May 5, 1983

Dr. Redding, Members of the House, Special Guests:

Since your program for this meeting is laden with the word "report," it is my good fortune to be the first among many, so to speak. I welcome this opportunity to talk with you about the North Carolina Medical Society Auxiliary and its members.

At times I have wondered if you really appreciate, understand, or even care about what your spouses do as Auxiliary members. Do you know why so many of your spouses give literally thousands of individual volunteer hours each year under the Auxiliary umbrella? Their activities in North Carolina during the past year have touched more than 60 different health related areas.

Several years ago I heard Dr. Howard Rome, a psychiatrist at the Mayo Clinic, discuss the changing role of the physician's wife. He did so with sensitivity and gentle, heartfelt concern. He described the earlier years when, as a "superwoman" — wife, mother, office-nurse — she was expected to sacrifice to medicine and to the public. She was pigeon-holed, it's true, but she had a defined role that gave her status and made her unique. She had a long running career with on-the-job training. And most important, Dr. Rome pointed out, the physician's wife was a member of the health care delivery team who really helped her husband.

We all recognize that, for most of us, this intimacy is gone in the modern health care setup and the impetus for a modern role for the medical spouse has to come from outside the home. She — or he — is certainly still a major part of the health team, but there are complications. The physician's work is demanding, draining, exciting, challenging — a world of its own. Much of that world is usually set off in a hospital with other highly trained professionals. Like it or not, time together has to be negotiated and accommodations made to this demanding medical structure. Sometimes, I have to call my husband three weeks in advance for an appointment.

For a large part of her life, the spouse has to create a separate world and she does just that. Her interests and talents are varied, her sense of service strong. She may complicate things with a career all her own (this would be expected of a male spouse). She may become an energetic community volunteer. The word "no" may be stricken from her vocabulary. Ask anyone whom she has served as a volunteer — they want more of her. She is a prize! Her intelligence and genuine social concern reinforce the goals of the health profession and do, indeed, improve her community.

So — we have come to the Medical Auxiliary. The Medical Auxiliary is a vehicle for these broad activities, for personal growth and, most important, for opportunities to be with others caught up in a similar experience because of their spouse's profession. Just as the Medical Society provides you with a cohesive and influential voice for medicine, so the Medical Auxiliary provides direction and a larger network for individual effectiveness.

Furthermore, just as you have an increasing number of female physicians, the Auxiliary is beginning to welcome male Auxilians. The brave, male chairman for the first AMA-Auxiliary Male Spouse committee hasn't found this entry difficult at all. He reports that, so far, his only problem with a traditional women's organization has been to learn to eat quiche. The Florida State Medical Auxiliary has a handsome, young, male Executive Administrator, who is managing to hold his own very well.

In his newsletters during the past year, your President, Marshall Redding, has chosen to turn for insights to words from Past Presidents of the Society. We too have looked to our past. This year, 1983, is the 60th Anniversary year of the North Carolina Medical Society Auxiliary. To commemorate this anniversary, "Historical Highlights" for 1923-1983 have been compiled by our historian, Lynn Scarborough, the first in 25 years.

Certain aspects of earlier Auxiliary years give us a sense of *deja vu*. "Socialism in Medicine" was widely discussed — in 1935. "State Medicine" threatened in 1937, and members were asked to speak against it. In 1949 Auxilians staged a "write-in" to legislators in efforts to defeat National Compulsory Health Insurance. In the summer of 1982, our members effectively fought alongside you against the Chiropractic Bill. A legislative alert system is in place all across the state.

Auxiliary members were part of forgotten causes in other medical eras, funding tuberculosis sanitorium beds, assisting in polio clinics. In 1940, Auxilians worked for legislation requiring a medical examination for a marriage license. In 1983, the focus is to influence drunken driver legislation. We produced an educational "if you drink, don't drive" 30-second radio tape and distributed tapes to more than 88 radio stations.

Actor Richard Chamberlain, in his "Dr. Kildare" role, came to lunch with North Carolina Auxilians in 1966. He has given medicine up for the church, among other things, and the Auxiliary seems to have grown more serious.

The outstanding reports I have received in April from nearly 51 North Carolina County Medical Auxiliary Presidents, have revealed more than $101,000 raised for local projects, scholarships, medical education, and research. Twenty-seven counties gave 59 health career scholarships. Mecklenburg County Medical Auxiliary has negotiated establishment of a major endowment fund for ongoing use in community service. The Lenoir-Greene Auxiliary has compiled the first "Guide to Health Services," a reference booklet welcomed and distributed by the local Chamber of

Commerce, Health Department, Public Library, physicians' offices, and hospital nursing staffs. Rowan County Auxiliary has pulled together a broad spectrum of groups to create a "Live and Learn" health education center in Salisbury.

This year new multi-county and multi-district meetings generated fresh ideas and enthusiasm. In February we initiated "Certificates for Volunteers," a useful record of attendance at State Auxiliary programs and workshops that provide educational and skill development.

Members of the North Carolina Medical Society Auxiliary celebrate the 60th Anniversary of their organization with confidence in its value and pride in its accomplishments.

The Medical Auxiliary is the volunteer arm of the Medical Society. We expect our partnership with you to multiply the voice of medicine because we are people who have chosen to support you in your efforts to protect and advance good medical care. We are your true friends and companions along the path toward this important goal.

Eleanor M. Hunt (O. Raymond)

North Carolina Names in the News

Dr. Edward P. Benbow, Jr., a retired pediatrician from Greensboro, received a life membership to the Board of Directors of The Children's Home Society at the agency's annual meeting May 13. A graduate of The University of North Carolina at Chapel Hill and Duke University School of Medicine, Dr. Benbow served as Chief of Pediatrics at Cone Hospital from 1965 to 1971, was a member of the executive committee of the board of trustees of Cone Hospital, and has been an associate clinical professor at the University of North Carolina. He was recognized by The Children's Home Society for his many years of service to the children in the care of the agency.

Page A. W. Anderson, M.D., professor of pediatric cardiology, Duke University Medical Center, was chosen president-elect of the American Heart Association, North Carolina Affiliate, during its 34th annual meeting and scientific sessions in Winston-Salem May 18-20. The othe officers are **Michel Ibrahim, M.D.**, Dean, UNC School o Public Health, president; **Sylvia Grogan**, Eden, chairman board of directors; **Sue Wilmoth**, Boone, chairman-elect **Margaret Kluttz**, Salisbury, secretary; **Carolina Becker, M.D.**, associate professor of epidemiology, UNC treasurer; **John Moore**, First Union National Bank, Chape Hill, alternate treasurer.

Nearly $200,000 in grants for cardiovascular research has been awarded by the Affiliate to scientists at the state's four medical schools this year. In addition, the Heart Association awarded two post-doctoral research fellowships totalling $27,560. Current cardiovascular research being supported by the American Heart Association in North Carolina, separate from Affiliate awards, totals $951,983.00, bringing the combined amount to nearly $1,150,000.

North Carolina medical history has been recorded in many ways. Oral history, once the dominant form, was displaced by writing. Medical history is now usually recorded by professionals who digest and summarize the primary data. **Eva Salber, M.D.**, is one who records oral history and gives us the stories as spoken by persons with minimal input from her. In her book entitled *Don't Send Me Flowers When I'm Dead: Voices of Rural Elderly*, one reads the stories spoken by our relatively vulnerable southern country folk. Problems of maintaining independence and of obtaining medical care, food and housing loom large in the minds of these elderly, rural persons. These oral histories give the lay person's view of the current medical scene. The book is published by the Duke University Press in paper and cloth editions.

Twenty-two international hospital officials, physicians, nurses, and government officials visited the Research Triangle area in April during a ten-day visit sponsored by the International Hospital Federation and coordinated by the **NC Hospital Association.** The IHF, with headquarters in London, is an organization that promotes mutual understanding and sharing of ideas among hospitals worldwide. Each year it sponsors two or three study groups to different countries to provide an opportunity for hospital leaders to learn about health care delivery in countries other than their own. Stops for this group from 11 countries included Durham County General Hospital, Wake Medical Center, Granville Hospital, Stovall Medical Clinic, and Person County Memorial Hospital.

In Memoriam

Salvatore Michael Pulverenti, M.D.

Dr. Salvatore M. Pulverenti of Winston-Salem died in March 1983 at the age of 37. He was born in Lawrence, Massachusetts, received a B.A. degree from St. Anselm's College in Manchester, New Hampshire and his M.D. degree from Georgetown University School of Medicine in 1967. After an internship at St. Vincent's Hospital in Worcester, Massachusetts, he completed an anesthesia residency at Peter Bent Brigham in Boston and a fellowship in respiratory care. He served in the Navy as a staff anesthesiologist at the U.S. Naval Hospital in Bethesda, Maryland. He was a staff anesthesiologist at the Miami Veterans Administration Hospital and at South Miami Hospital before moving to Winston-Salem in January 1982.

He was a Diplomate of the American Board of Anesthesiology and a member of the American Society of Anesthesiologists and the International Anesthesia Research Society.

He is survived by his wife, Rosalee, two daughters, and one son.

Dr. Pulverenti was not only an excellent anesthesiologist, but a warm, friendly family man as well. He made a host of friends in the short time he lived in Winston-Salem. His untimely death saddens all who knew him.

Roy G. Sowers, Sr., M.D.

Roy G. Sowers, a hightly respected local otolaryngologist from Sanford died March 5, 1983. Dr. Sowers was a native of Davidson County who received his M.D. from the University of Maryland and practiced medicine in Sanford for fifty years before retiring. He served as a Naval flyer in World War I; he also volunteered for the Medical Corps, U.S. Army the day after Pearl Harbor was attacked, and achieved the rank of Colonel during World War II. Together with the late Dr. F. L. Knight, Dr. Sowers owned and operated the old Central Carolina Hospital until the Lee County Hospital was built to replace it.

Dr. Sowers is remembered for his keen mind and sharp wit, and for an abiding interest in literature and the Bible.

He is survived by his widow, Gertrude Sowers, and two children, Roy Sowers, Jr., and Frances Kinard.

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Letters to the Editor

A Different View of AIDS

To the Editor:

It was with outrage and considerable embarrassment for the medical profession and for our local *Journal* that I read Reverend G. R. Selby's Editorial entitled "AIDS and the Moral Law" (May 1983; Vol. 44, No. 5). His essay seems to be an exercise in second-guessing supernatural intent based on an interpretation of selected scriptures from one religious tradition and supported by the existence of taboos in primitive societies. Surely, the Reverend's opinions would have been more appropriately presented as a letter to the editor rather than an editorial in a medical journal!

Reverend Selby suggests that the presence of Acquired Immune Deficiency Syndrome (AIDS) in the homosexual community provides us with a clue to a ". . . 'natural law' which links morality and health in human society." This retrospective analysis of revealed truth based on ancient tribal law as a means of social control should be considered dangerous.

Of course, ". . . a universal natural moral law . . ." as ". . . a prerequisite for human health . . ." would be a wonderful thing to discover, whether or not it was in keeping with Judeo-Christian principles. It appears, however, that the most widespread moral directive discovered in the belief systems of cultures geographically and temporally distant is the Golden Rule, truly a prerequisite for human health in its command to understand empathically and to behave toward all with good will.

There is no evidence that ". . . the Christian prohibition against homosexual practices had resulted, over the centuries, in the natural eradication of the disease." Physicians will recall that there is a substantial body of evidence supporting the emergence of higher rates of morbidity and social dysfunction among members of any group who have been arbitrarily excluded from the rights and responsibilities of their society's mainstream and thereby subjected to oppression, to victimization, and to coercion to conform (e.g., racism, sexism, homophobia, and the full miscellanea of fears and hatred).

Reverend Selby points out that in primitive societies, "Life and religion were inextricably mixed. . . ." This is no longer the case. Even in today's ". . . highly sophisticated (some would say decadent) societies . . ." many attitudes and certain behaviors do arise from the consciously or unconsciously motivated adherence to mythology. But a theological approach to a terrifying new disease syndrome with a mortality rate of some 40% within months of diagnosis is at this point quite superfluous, and the prominent position of its publication in the *Journal* is even sadder. Beliefs extrapolated from the transcribed, centuries-old oral tradition of a primitive community cannot be allowed to serve as major parameters for epidemiology, etiology, the efficacy of clinical practice, or the establishment of medical policy or medical ethics.

The practice of medicine and specifically the issue of whom to serve have come a very long way from ancient codes and traditions in which certain people were to be excluded from a physician's attention. Section 1 of the Principles of Medical Ethics (American Medical Association) now states, "A physician shall be dedicated to providing competent medical service with compassion and respect for human dignity." It is clear that no physician should endorse or act upon any policy that excludes, segregates, or demeans the dignity of any patient because of ethnic origin, race, sex, creed, age, socioeconomic status, or sexual orientation.

In his essay entitled "Medicine in Modern Society" Walsh McDermott presents a point of view which should be brought to the attention of your readers while considering Reverend Selby's remarks:

> Moral judgments must be made by the physician engaged in individual patient care, but they are to be made on his own professional acts and those of his colleagues, not on the actions of those who sought his care. Any moral judgments he might make on his patients' behavior are private matters to be kept within himself; he must not permit them to influence his own professional acts. (Beeson and McDermott, Eds., *Textbook of Medicine*, 14th Edition. Philadelphia: W. B. Saunders Company, 1975; p. 13)

It is frightening to link a moral judgment to any person or group of persons because of a disease state. Perhaps Reverend Selby would agree that this is frightening and would advocate the attempt to convince homosexuals to avoid God's punishment (contracting AIDS) by altering their sexual preferences. This is a valid approach only within the context of missionary zeal and as a point of debate (or even of consensus) among those who share a common faith; but it has no place in medicine, where the approach is one of education, support, and symptom relief or cure.

There exist many diseases which are attached to specific groups of people by combinations of heredity, environment, and life-style. Perhaps the few following examples, drawn from the hundreds of such diseases, will serve as a reminder that the frequency of disease in selected populations is a statistical reality and not a moral judgment: Tay-Sachs Disease in Ashkenazic Jews; Sickle Cell Anemia in the Black population; Beta Thalassemia in Mediterranean populations; Huntington's Chorea; and the medical problems of obese persons or of substance abusers (including smokers and alcoholics). Are we to assume that these people are being punished by God? Or that those unfortunate hemophiliacs, intravenous drug abusers, and Haitian immigrants in whom AIDS has been diagnosed also share the fate of God's condemnation? The implication that physicians are rebuffing the will and law of God in their attempts to allay suffering by finding relief or cure for any disease is deplorable.

Clifton R. Tennison, Jr., M.D.
1502 James Street
Durham 27707

The Editor replies:

I am impressed by Dr. Tennison's command of the English language and pleased that psychiatrists are reading the Journal.

To the Editor:

In the attempt to discover etiologies for new diseases epidemiologists must be guided by the formation of hypotheses. The most useful of these, however, tend to be those which are based on existing data.

In "Aids and the Moral Law" (NCMJ, May 1983) Rev. Selby suggests that the emergence of AIDS in the late 1970s coincided with a rise in the incidence of homosexual behavior. There is absolutely no evidence to support the speculation that homosexual behavior is more frequent now than at any other time since the first century. Nor is there any evidence of its association with decadence, since it has been observed in the most advanced civilizations as well as the most primitive.

Rev. Selby implies that unless strong penalties exist a large portion of the population will engage in homosexual acts. Historically most cultures have attempted to regulate homosexual behavior rather than to suppress it. Interestingly individuals with an exclusively homosexual orientation tend to be found more frequently in cultures which attempt complete suppression.[1]

There has certainly been wide variation over time in prejudice against homosexuality and corresponding variations in individuals' openness about engaging in such behavior.[2] If prejudice is defined as an unfounded judgment with an accompanying feeling tone, Rev. Selby must be said to be strongly prejudiced against gay persons. As such it would be difficult to justify inclusion of such an editorial in a medical journal.

One effect of such an editorial might be to encourage physicians to take a similarly condemnatory attitude. Such an attitude would only make gay patients more reluctant to reveal their orientation to their doctors, thus preventing us from being helpful by sharing information about the current epidemic or discovering early signs of the illness.

J. Mark Rowles, M.D.
Chapel Hill 27514

1. Churchill W. *Homosexual Behavior Among Males.* Hawthorne: 1967, pp. 70-88.
2. Boswell J. *Christianity, Social Tolerance and Homosexuality.* University of Chicago Press 1980.

The Editor replies:

The point is not the number of homosexual persons. It is the degree of promiscuity. I know of no accounts of homosexuality in past generations where homosexual contacts numbered in the hundreds and thousands.

More Letters about the New *Journal*

To the Editor:

Something new has obviously happened to the *Journal.* I like the content and format with a touch of humor an practicality.

It is a pleasure to know that you are putting your skills t work in this direction and I look forward to future issues.

Lewis S. Thorp, M.D
Rocky Mount 27801

To the Editor:

In general, I have not been a very big fan of the *Nort Carolina Medical Journal.* In fact, a year or so ago, when the Medical Society was considering doing away with it, I was supportive of the concept of continuing the *Journal,* but, frankly, I was not very enthusiastic. It is therefore with great joy that I have observed the miraculous recovery of the *Journal.*

J. Edwin Clement, M.D.
Greenville 27834

To the Editor:

You have brought about a marked improvement in the *North Carolina Medical Journal* and I want to congratulate you. I am not surprised at all to see this, because you have never failed us.

Albert Stewart, Jr., M.D.
Fayetteville 28305

To the Editor:

I *very* much approve of your first issue of the *Journal.* Having Ernie's cartoons on the front page is a grand idea. You won my heart (and the beleaguered Finance Committee's heart as well) with the new printing contract and addressing issues via our computer. As a non-believer (not in the *Journal,* but the failure of members to read it), I do think you may have found a cure!

Shahane R. Taylor, Jr., M.D.
Greensboro 27401

To the Editor:

I can see your handiwork in the May issue of the *North Carolina Medical Journal,* and I am sure that it is going to continue to get better and better with the passage of time.

J. Lamar Callaway, M.D.
Durham 27710

To the Editor:

I am pleased to see a new tack being taken with the *North Carolina Medical Journal.* As an ophthalmologist, however, I must point out that black print on blue paper is difficult to read and a different color combination (? yellow) might be physiologically somewhat better. I think it is also worth pointing out with some sort of heading that this section of the *Journal* can be removed and placed in the waiting room as a patient information and education aid.

An idea for an article for this section which you might consider would be one on the therapy, if any, for the too short and too tall child. I am speaking as the parent of short children who have had a great deal of interest in this subject in the past.

Banks Anderson, M.D.
Durham 27710

The editor replies:

I should have consulted you before the April issue. We have gone to a much lighter blue and are considering moving to yellow. We will tackle the long and short of it.

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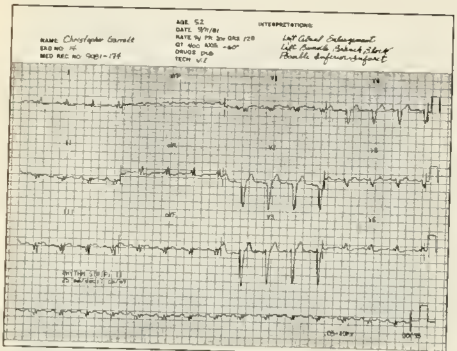

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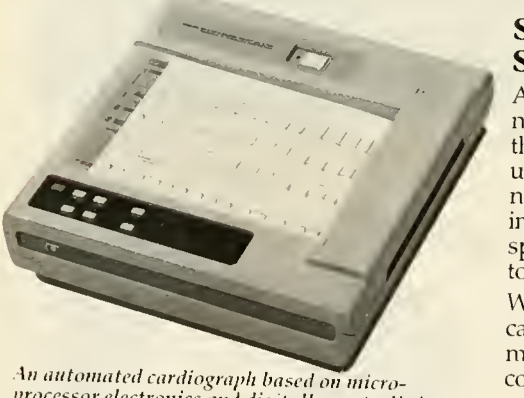

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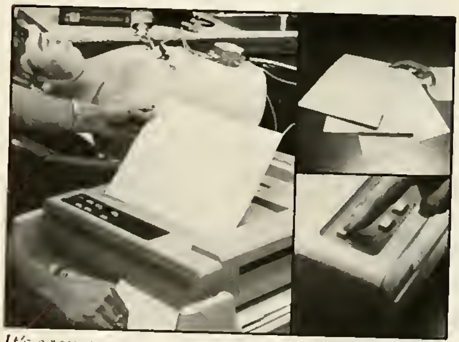

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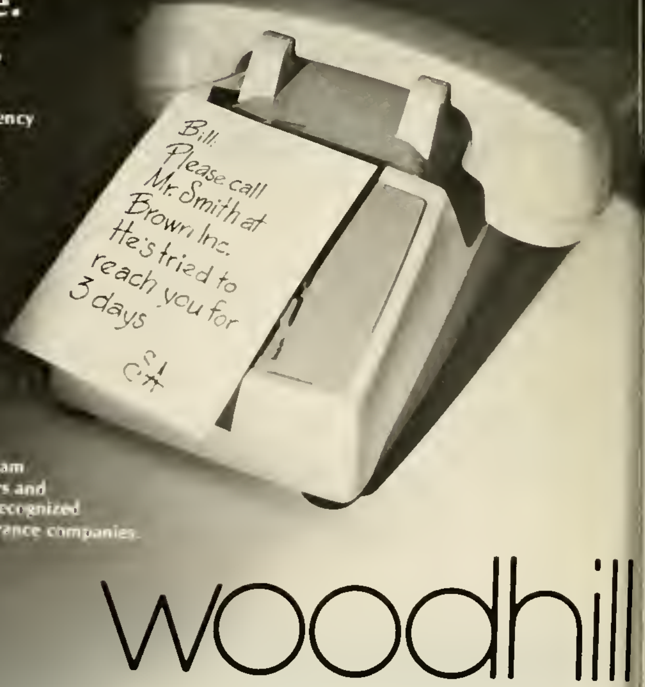

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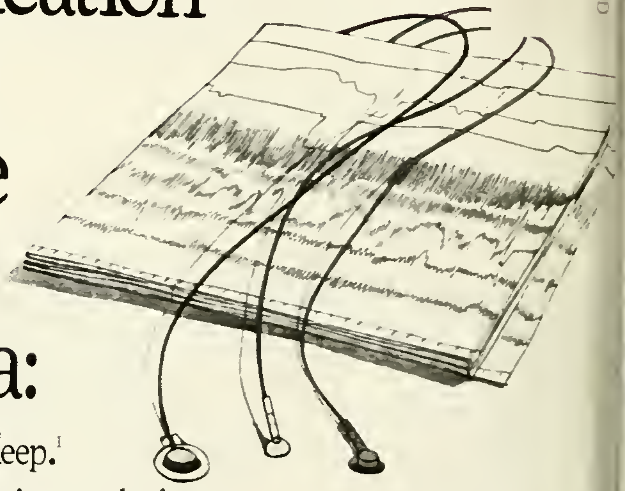

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August 1983, Volume 44, No. 8

The State of our Health, by Ronald H. Levine, M.D.

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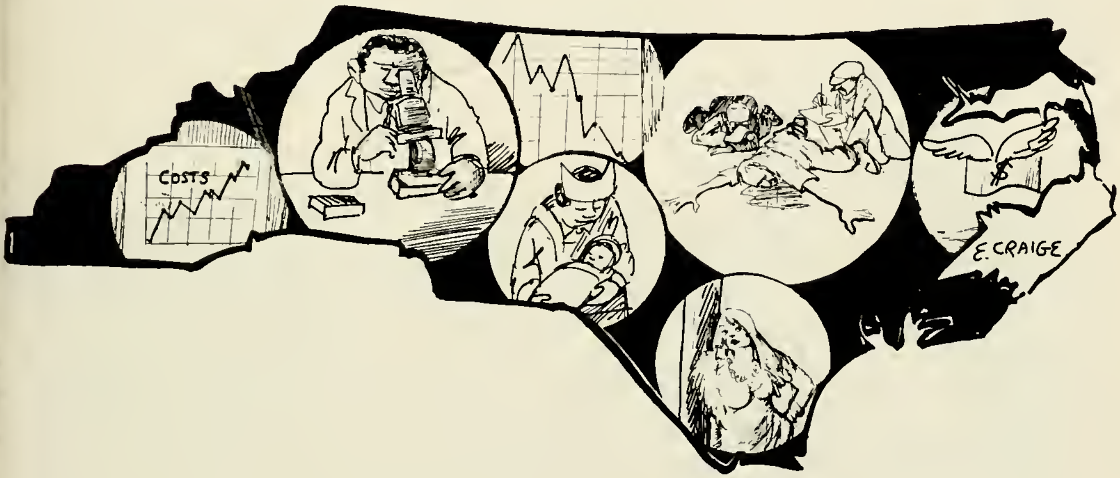

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1983 Committee Conclave: September 28-October 2, Southern Pines

1984 Midwinter Conference: January 27, Greensboro

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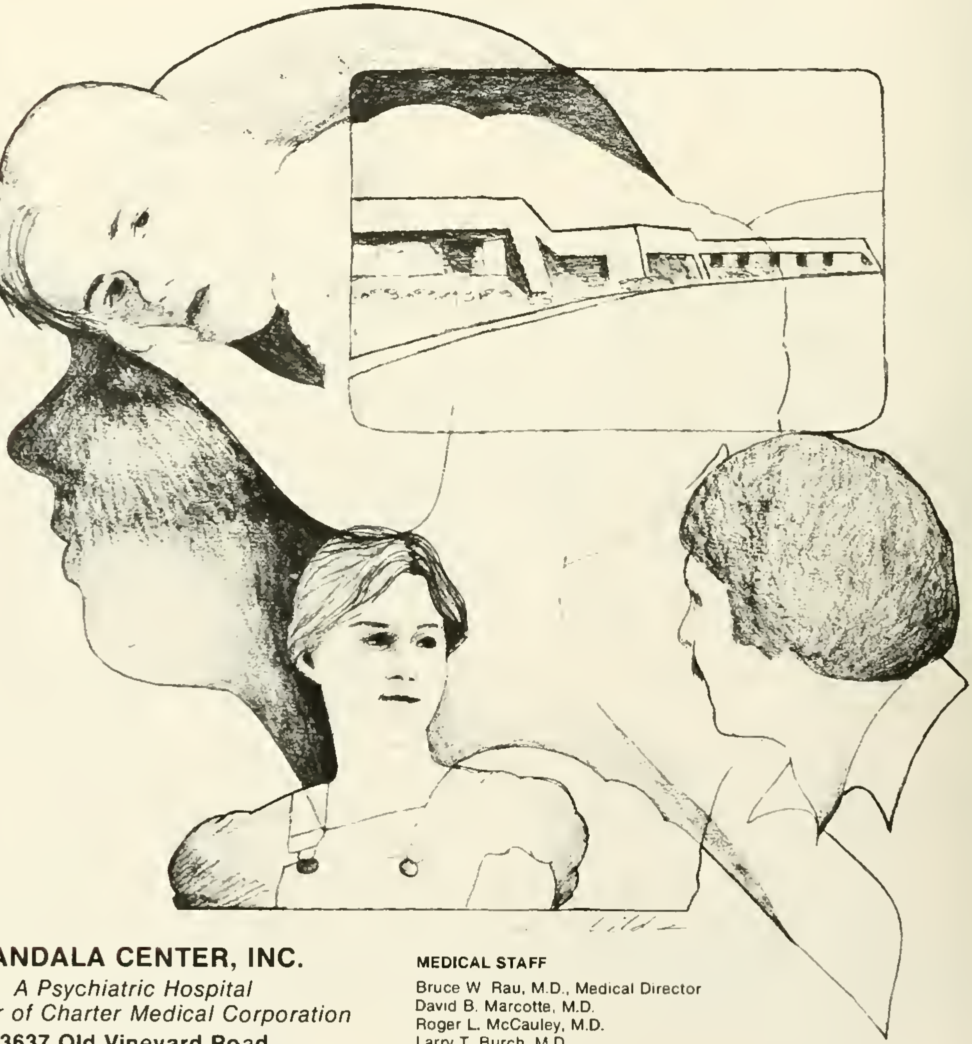

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Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Ceclor

Contraindication Ceclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics

Warnings IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS INCLUDING ANAPHYLAXIS, TO BOTH DRUG CLASSES

Antibiotics including Ceclor, should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides semisynthetic penicillins, and cephalosporins), therefore it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics Such colitis may range in severity from mild to life-threatening

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone In moderate to severe cases management should include sigmoidoscopy, appropriate bacteriologic studies and fluid, electrolyte and protein supplementation When the colitis does not improve after the drug has been discontinued or when it is severe oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C difficile* Other causes of colitis should be ruled out

Precautions: *General Precautions*—If an allergic reaction to Ceclor occurs, the drug should be discontinued and if necessary, the patient should be treated with appropriate agents, e g pressor amines, antihistamines, or corticosteroids

Prolonged use of Ceclor may result in the overgrowth of nonsusceptible organisms Careful observation of the patient is essential If superinfection occurs during therapy appropriate measures should be taken

Positive direct Coombs tests have been reported during treatment with the cephalosporin antibiotics In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs testing of newborns whose mothers have received cephalosporin antibiotics before parturition it should be recognized that a positive Coombs test may be due to the drug

Ceclor should be administered with caution in the presence of markedly impaired renal function Under such conditions careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended

As a result of administration of Ceclor, a false positive reaction for glucose in the urine may occur This has been observed with Benedict s and Fehling s solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip USP Lilly)

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease particularly colitis

Usage in Pregnancy—Pregnancy Category B—Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Ceclor There are however, no adequate and well-controlled studies in pregnant women Because animal reproduction studies are not always predictive of human response this drug should be used during pregnancy only if clearly needed

Nursing Mothers—Small amounts of Ceclor have been detected in mother's milk following administration of single 500-mg doses Average levels were 0 18 0 20, 0 21, and 0 16 mcg/ml at two three four, and five hours respectively Trace amounts were detected at one hour The effect on nursing infants is not known Caution sh exercised when Ceclor® (cefaclor, Lilly) is administered to a n woman

Usage in Children—Safety and effectiveness of this produ in infants less than one month of age have not been establish

Adverse Reactions: Adverse effects considered related to th with Ceclor are uncommon and are listed below

Gastrointestinal symptoms occur in about 2 5 percent of p and include diarrhea (1 in 70)

Symptoms of pseudomembranous colitis may appear eith or after antibiotic treatment Nausea and vomiting have been rarely

Hypersensitivity reactions have been reported in about 1 of patients and include morbilliform eruptions (1 in 100) Pr urticaria and positive Coombs tests each occur in less than patients Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis/arthralgia and, frequently, fever) have been reporte reactions are apparently due to hypersensitivity and have us occurred during or following a second course of therapy wit Such reactions have been reported more frequently in childre adults Signs and symptoms usually occur a few days after of therapy and subside within a few days after cessation of t No serious sequelae have been reported Antihistamines and corticosteroids appear to enhance resolution of the syndrom

Cases of anaphylaxis have been reported, half of which ha occurred in patients with a history of penicillin allergy

Other effects considered related to therapy included eosin (1 in 50 patients) and genital pruritus or vaginitis (less than patients)

Causal Relationship Uncertain—Transitory abnormalities laboratory test results have been reported Although they we uncertain etiology they are listed below to serve as alerting information for the physician

Hepatic—Slight elevations of SGOT, SGPT, or alkaline pho values (1 in 40)

Hematopoietic—Transient fluctuations in leukocyte count predominantly lymphocytosis occurring in infants and young (1 in 40)

Renal—Slight elevations in BUN or serum creatinine (less 500) or abnormal urinalysis (less than 1 in 200)

---

* Many authorities attribute acute infectious exacerbation of bronchitis to either *S pneumoniae* or *H influenzae* [8]

Note Ceclor is contraindicated in patients with known aller cephalosporins and should be given cautiously to penicillin- patients

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophy rheumatic fever See prescribing information

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EDITORIAL

Requirements for Successful Coalitions

Eugene A. Stead Jr., M.D.

The Committee on Cost Effective Medical Care of the North Carolina Medical Society has published an excellent manual outlining at the community level the steps to be taken in forming a partnership between doctors, health providers, and consumers to control health care costs. The doctors and hospitals will have the responsibility of assuring that the quality of care does not suffer. Business men and consumers will see eye to eye on the issue of cost. Highly individualistic doctors, accustomed to the professional ethic to provide the best of care with cost being a secondary consideration, will be working with persons more oriented to accessibility, cost, profits, marketability, and competition. Industry produces many copies of the same product. Medicine works on unique individuals and tailors its output to account for these many differences in patients included within each category of disease.

The time has come for the formation of coalitions to devise methods for giving quality care at an affordable cost. The problem will be in the diversity of the persons forming the coalition. Those of us in academic medicine have had the opportunity to form coalitions of scientists to work in areas which bridge several disciplines. In many instances, the members of the group become impatient and leave because progress towards the established multidiscipline goal is always slower than it would be if each person elected to pursue a goal encompassed within his own discipline. Words have different meanings within each discipline; ideas that are simple to members of one discipline are complex to those of other disciplines. The work habits, the space requirements, the degree of technical support, and the money needed for various types of equipment differ. The style of writing and the media used for scientific communication differ.

Not everyone can work in multidiscipline teams. When certain members of each discipline believe that the goal is important and can be reached only by the multidisciplined approach, they will take the time to learn the language and ways of working of the other disciplines. They will tolerate the initial lag in production and charge it up to education. When the group becomes cohesive, it will move toward an agreed goal and will accomplish tasks that cannot be duplicated by the rugged individualist.

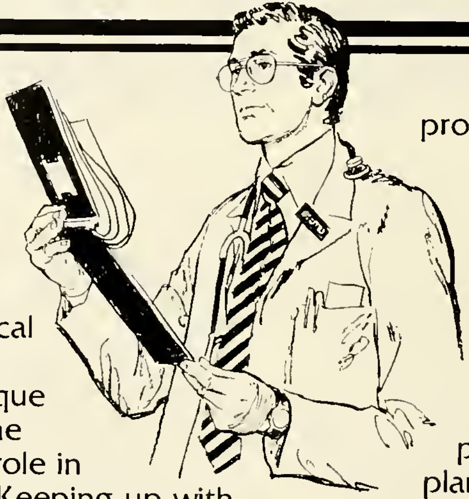
Time will tell if the members of the coalition to control costs have the patience, the desire for education, and the ability to agree on attainable multidisciplinary goals. The fact that coalitions will be formed in many communities enhances the chances for success. We will have the opportunity to learn and profit from both successful and unsuccessful ventures.

From the Department of Medicine, Duke University Medical Center, Durham, NC 27710.

Organ Donor Hotline

The nation's first toll-free telephone number for physicians, nurses, and other health professionals with questions about a potential organ donor has been based at the University of Pittsburgh. The number will assist health professionals by providing urgently needed information for a donor and referring callers to their local procurement organization.

The number, restricted to doctors, nurses, and other health professionals, is 800/24-DONOR. The number operates 24 hours a day, 365 days a year. It is a service of the North American Transplant Coordinators Organization (NATCO) and part of their attempts to expand efforts to match available organs with those people waiting for a transplant. NATCO is the professional association of individuals responsible for organ procurement in hospitals.



The Everchanging Field of Medicine...

A doctor's study of medicine doesn't end with medical school. Every medical advance or new technique redefines the physician's role in some way. Keeping up with these constant developments is part of being a doctor.

Times do change...and this is especially true in the field of medicine.

Yet, there are some things in life that don't change. Accidents and serious illnesses still happen unexpectedly. And financial hardship often follows — especially if you're kept away from work for a while.

For that reason, Disability Income Protection for younger doctors was developed. As a member of the North Carolina Medical Society, you are eligible for this important protection which can help replace lost income if a covered accident or illness keeps you from your practice.

The regular monthly benefits payable under this plan may be used to cover any expenses you decide on — medical bills, groceries or even car payments.

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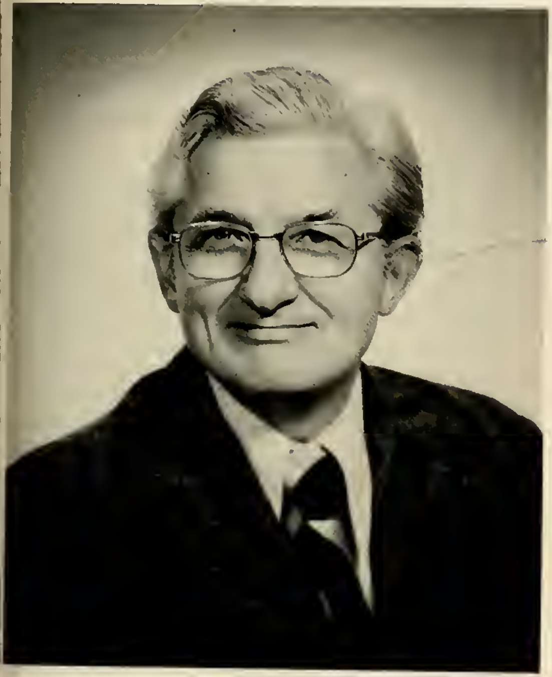
SPECIAL ARTICLE

President's Acceptance Remarks

Jack Hughes, M.D.

I would like to introduce my very brief remarks with some words that I have borrowed from the Psalms:

> Behold how good and joyful a thing it is
> When brothers and sisters dwell in unity.



HUGHES

This theme of unity is not anything new. It has been woven in varying degrees into the mantle of most of my recent predecessors, particularly my immediate predecessor, who has emphasized this point on many occasions. You have heard this theme presented several times during this week and I would only remind you that we are still too much divided at a time when we need unity more than ever.

I think it is obvious that there is a certain amount of division among physicians and some of that is really healthy. The loyal opposition is necessary for any democracy to function.

It has often been said, and I think with some basis in fact, that when you ask three physicians to discuss a matter you're going to get at least two opinions, and very often three opinions. So it is not surprising nor really unhealthy for us to have some differences of opinion, but most of these differences can be resolved by discussion and a consensus reached with the will of the majority prevailing and without any infringement on the rights of the minority.

I had planned to talk a little bit about how we got divided, what we're doing to try to achieve some greater degree of unity, and then to suggest what it was that we wanted to do with this unity once we got it, but I think maybe it's a little bit late in the evening to start preaching about those things at this moment. I merely want to emphasize and again re-emphasize what my predecessors have suggested and say to you that we need a united effort, now more than ever, to reach those goals which we have set for ourselves of providing the best health care possible at the price that society has decided it can afford, certainly with the active participation of physicians, and hopefully under the leadership of those physicians. Perhaps then in a year or two or three, maybe even at this same event, we can say truthfully: behold, it is a good and joyful thing this dwelling in unity!

SPECIAL ARTICLE

Presidential Address

Marshall S. Redding, M.D.

I have some friendly advice for those of you who may harbor a secret desire to be President of the North Carolina Medical Society. The job has many rewards and satisfactions, but it lacks the three Gs. It's short on gold, glamour, and glory.

But the job has its good points. It's an intense learning experience. Among other things, I've learned that people are peculiar creatures. And one of the most peculiar things about people is that they stubbornly refuse to act in their own best interest.

Physicians see this phenomenon every day in their office. We tell our patients that *they* have to take primary responsibility for their own health. We remind them that we can treat their illnesses and diseases, but we can't take their medicine for them, we can't exercise for them, we can't eat proper foods for them, and so on. All too often our good counsel goes in one ear and out the other. Too many of our patients cling to bad habits . . . even things that can kill them . . . and we shake our heads over the human folly we can't prevent.

The real problem here is that people tend to take a short term view of things. They have trouble making even small sacrifices in exchange for long term benefits. They cheat their future in favor of their present.

We physicians do this too. And I'm not just talking about our own bad health habits. I'm referring to our attitude toward our own profession.

We do a good job with the short term tasks of day-to-day patient care. We spend hours and hours studying new developments. We use the latest procedures and the latest medications. But how much attention do we give to the future of medicine? What are we doing to nurture and preserve an environment where it's *possible* to practice good medicine?

I've heard all sort of excuses in my travels for not joining or participating in organized medicine. Most of them are a poor camouflage for laziness or selfishness.

Too many doctors assume that some other doctor will do the essential work for them. They assume that someone else will step into the breach. But Doctor Elsewhere really doesn't exist. Every doctor who fails to participate in the civic and political work of organized medicine simply weakens our efforts by a measure of one. And ones add up fast.

Too many doctors assume that the Medical Society staff will take care of the profession's needs. This too is a false assumption. We have an excellent Medical Society staff, but the staff can't do your political and social work any more than other doctors can. The staff can't give your time, they can't give your expertise, and they can't make your decisions.

Another excuse, and this one is the flimsiest of all, is that dues are too high. That one doesn't wring any tears from me. County Society dues range from modest to very modest. AMA dues are substantial, but so is the AMA's work. Physicians who claim they don't get much from the AMA aren't looking very hard.

That brings me to your State Society dues. The North Carolina Medical Society is the 10th largest medical society in the 50 states. Until last year's dues increase, we were tied with Tennessee for having the *lowest* state dues in the nation. Even *with* our dues increase, our dues still rank among the 10 lowest in the nation.

The excuse that I hear most often is lack of time. Doctor So-And-So says he or she just can't spare the time. This one sounds pretty good. All of us are busy people; many of us are extremely busy. But this excuse founders too when you consider the number of busy physicians who *do* make time for Medical Society work. They have patients to treat; they have students to teach; and they have families that need attention. But they make time for the Medical Society because they have the savvy to realize what's at stake.

And that brings me to the last excuse — the one tha would count if there was any truth in it. Some physicians say that the Medical Society doesn't do anything for *them*

Well, let's be realistic. I don't blame any physician fo asking: "What's in it for me?" I don't object to the question, but I do object when doctors come up with the wrong answer.

In essence, the Medical Society gives you an opportunity to shape your own future. You can be a splendid doctor on a day-to-day basis without having any influence on the broader trends in medicine. This is sad.

A Harvard sociologist named Paul Starr has written a fine book called *The Social Transformation of American Medicine*. He has articulated some of the broad trends so well that I'll read you a short excerpt from his book:

"Medicine, like many other American institutions, suffered a stunning loss of confidence in the 1970s. Previously, two premises had guided government health policy First, that Americans needed more medical care — more than the market alone could provide; and second, tha medical professionals and private voluntary institutions were best equipped to decide how to organize those services.

"Until the 1980s the first of these premises had not ye undermined the second. Increased Federal aid initially did not much enlarge the scope of public regulation. Practitioners, hospitals, researchers, and medical schools enjoyed a broad grant of authority to run their own affairs."

Well, our mandate ran out in the 1970s. For the first time in a century, we're facing *combined, organized* challenges to our political influence, our economic power, and ou cultural authority. We're better doctors than ever, but the public is increasingly skeptical of our abilities and our motives.

Now, what exactly are you getting for your dues? You're getting a range of services that I'll lump under three headings. You're getting a legislative program; you're getting a communications program; and you're getting administrative support.

The legislative program gives you a means to influence legislation in Raleigh and Washington. The state society now employs two full-time lobbyists, and it's their job to see that our elected representative knows our position on important health legislation. Our lobbyists also warn us about pending legislation and give us time to react to it. If you read your society mail, you'll know about important bills and their implications for medicine.

The legislative program offers leverage as well as knowledge. You'll know who to call or write when an issue affects your practice. You'll have a guide as to which candidates support organized medicine and which don't. And, through Medpac-state and Medpac-federal, you'll have a mechanism for helping the candidates who support medicine.

Some humorist has said that no man's life, liberty, or property are safe while the North Carolina legislature is in session. But at least our legislative program gives us a way to defend ourselves and our patients against ill-conceived programs.

We have a new Communications Director running a new communications program. If you read your Medical Society *Bulletin* each month, you'll have a good idea as to what the Medical Society is doing for you. The new *Bulletin* covers legislative issues, CME programs, Society events, and other topics of interest.

The Society is also trying to do a better job of communicating with the public. Beginning this summer you'll be hearing tape recorded versions of the "Tarheel Health Watch" on radio stations across the state. The "Health Watch" tips enable us to get accurate medical information to the public, and the program will remind the public that the state's physicians *do* care about their well-being.

Let me add that we have a revised *North Carolina Medical Journal*. The new *Journal* carries articles for our patients as well as scientific information. I urge you to take a close look at the latest issues.

Finally, the Medical Society provides administrative support for the organized activities of our state's doctors. The headquarters staff provides support for many of the state's specialty societies.

The telephone calls, the mailings, the planning that makes things happen — none of that falls from the sky. Unsung staff people do all of that, and things run so smoothly that many of us don't realize the work involved. The headquarters staff also plans important meetings such as this one and the Committee Conclave at Mid Pines in September. We've also got a new Business Affairs Director who's working to manage your dues money wisely.

Sooner or later, all of these activities have an impact on your professional life. They affect your compensation, your status, and your ability to practice good medicine. *That* is what's in it for you.

I realize that I'm preaching to the church choir. You wouldn't be here if you didn't believe in participating in your state Society. But each of us needs to remember *why* we're here. We also need to go home with the conviction that more of our colleagues should join us. You shouldn't remain silent when you hear excuses like those I've mentioned. You shouldn't let new colleagues come into your area without telling them about the Medical Society, *and* urging them to join.

I'm not going to close this speech by playing on your darkest fears, nor am I going to strain for some glittering optimism. My crystal ball probably doesn't work any better than yours, and it would take too much time for me to describe every plausible image of our future.

Some pundits say we're headed for an era of socialized medicine. (Recent trends in federal and state regulation would suggest that view.) Other observers say that we're entering the age of corporate medicine. (New developments such as HMOs, PPOs, and hospital conglomerates would support that view.) Whatever happens, it's very important that physicians stay in the thick of the action.

We may not be able to control every aspect of our professional destiny, but we've got to try. No other group has our training, our experience, or our perspective. Yes, let's do a good job in our day-to-day work, but let's also take the long view and devote a portion of our time to the maintenance of our profession.

That's essential work, and no one but us can do it.

SPECIAL ARTICLE

Applicability of the North Carolina Right to a Natural Death Act as Amended in 1983

Delford L. Stickel, M.D.* and Arlene J. Diosegy, J.D.†

THE North Carolina Right To A Natural Death Act of 1977 (as amended in '79, '81, and '83) can protect physicians and hospitals from civil or criminal liability arising from withholding or discontinuing extraordinary means of life support. In the Act "*extraordinary means* is defined as any medical procedure or intervention which in the judgment of the attending physician would serve only to postpone artificially the moment of death by sustaining, restoring, or supplanting a vital function."

The two principal changes in the amendments enacted this year were as follows: (1) the required number of physicians concurring with the attending physician was reduced from two to one; and (2) the wording for the required involvement of the patient's family was changed from "at the request of . . ." to "with the concurrence of. . . ."

Applicability. The Act does *not* purport to cover all circumstances of foregoing extraordinary means, and where it does apply its provisions are protective and permissive, not mandatory. The Act *can* be applied in situations that satisfy the following conditions: the attending physician and the patient's family face a question of foregoing one or more modalities of treatment that are deemed to be "extraordinary"; and there is sufficient time to secure the opinion of a consulting physician. The decision to be made may be a matter of foregoing cardiopulmonary resuscitation, or limiting the resuscitation effort, or foregoing other means of life-support, e.g., dialysis or nutritional support. In order to secure the protection of the Act, members of the staff of each hospital will need to establish implementing procedures for their own institution. The procedures are likely to vary with consideration of local medical practices and existing hospital policy and procedures.

§90-321 — Orders written to withhold or discontinue extraordinary means on the basis of prior declaration of the patient. The first part of the Act, §90-321, provides that a person may make a written declaration in advance authorizing the physician to forego extraordinary means. Such a declaration, often called a "living will," may be proved by the Clerk of Superior Court or certified by a notary public. If the patient has previously executed such a declaration which has not been revoked, then this declaration takes precedence over the provisions of §90-322 and will guide the attending physician. In Duke Hospital the following documentation is to be recorded in the medica record when the attending physician applies the provision of §90-321: (1) a copy of the patient's declaration (livin will); and (2) a statement by the attending physician that th patient's underlying condition is terminal and incurable an that one or more vital functions can be restored or sustaine only by extraordinary means; and (3) a statement by consulting physician who concurs with the attending physi cian's assessment of the patient's condition.

§90-322 — Orders written to withhold or discontinu extraordinary means in the absence of a prior declara tion. The provisions of §90-322 apply in the absence of prior declaration of the patient. In Duke Hospital the fo lowing statements are to be recorded in the patient's medi cal record when the attending physician applies the provi sions of the §90-322: (1) a statement that there is no know edge of the patient's having made a declaration (living wil under the provisions of §90-321; and (2) a statement by th attending physician (a) that the patient's underlying condi tion is terminal, incurable, and irreversible, (b) that th patient is comatose with no reasonable possibility that h will return to a cognitive sapient state or is mentally in capacitated, and (c) that one or more vital functions can b restored or sustained only by extraordinary means; (3) statement by a consulting physician who concurs with th attending physician's assessment of the patient's conditio and (4) a statement that the withholding or discontinuing c extraordinary means has received concurrence from th patient's spouse, guardian, or majority of relatives in tha order, if any are available.

Comment. It will be helpful to keep in mind the mai purpose of the Act, which is to eliminate legal argument for continuing life-supportive measures after the attendin physician and the family agree that there is no longer an medical or human reason to do so. This purpose is the sam as that of the first natural death statute, enacted in Califo nia in 1976, and of such statutes in several other states These statutes declare that death following a deliberat discontinuing or withholding of extraordinary means wi be deemed to be a natural death, i.e., not an inflicted death

Much of §§90-321 and 90-322 are devoted to procedura detail, but the Act is "non-exclusive," i.e., it imposes n implied restrictions in circumstances where the attendin physician chooses not to apply its provisions. The Act thu effectively enlarges the freedom of the attending physicia and the family to make appropriate decisions in the man agement of the patient's final illness.

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* Professor of Surgery and Associate Director for Medical Affairs, Duke University Medical Center.

† Assistant University Counsel, Duke University Medical Center.

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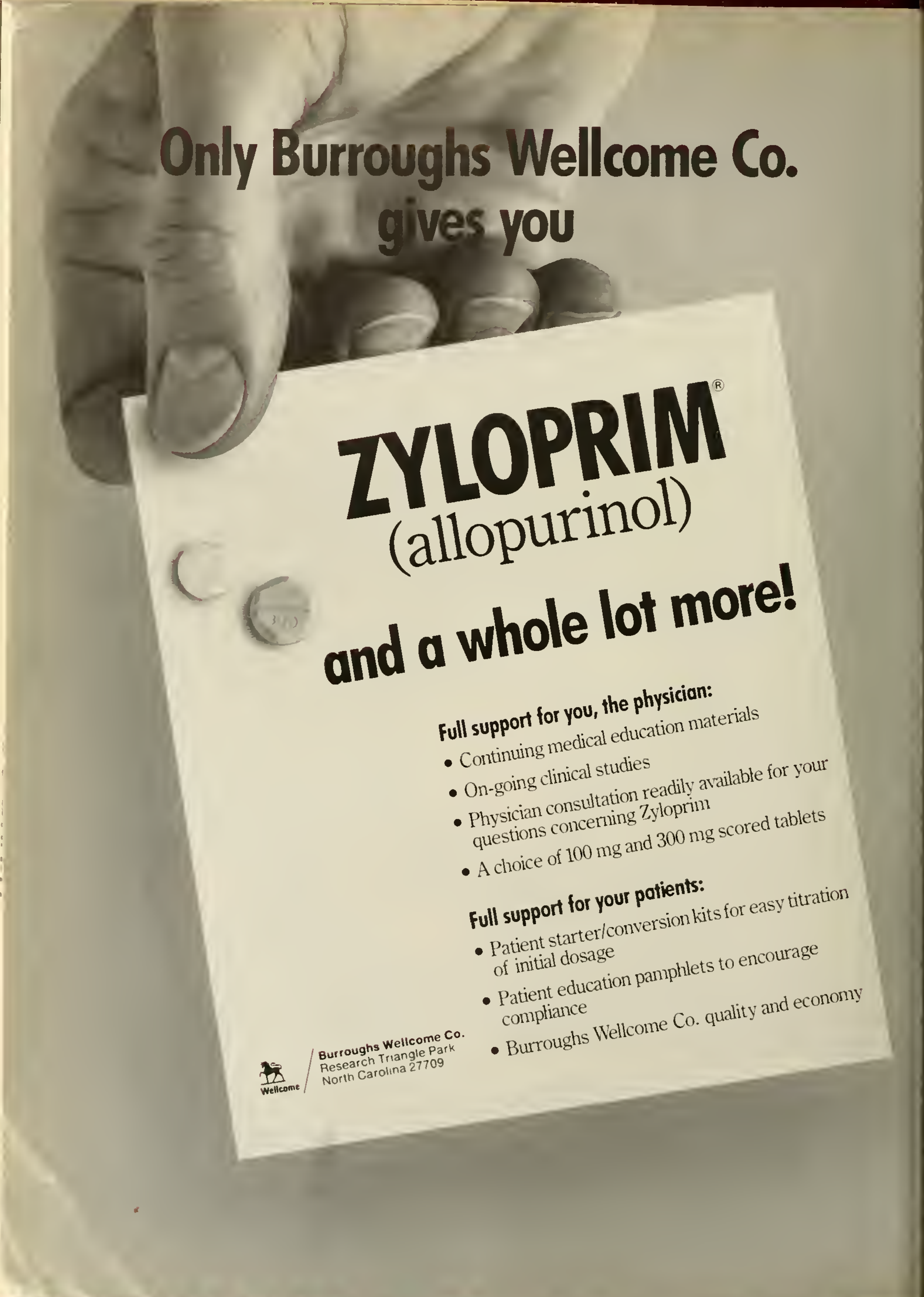

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SCIENTIFIC ARTICLE

Small Cell Carcinoma of the Lung: Rapid Development of Acute Leukemia

Don V. Jackson, M.D., Julia M. Cruz, M.D. and Ralph Woodruff, M.D.

THE ability to achieve complete clinical response and long-term survival in patients with small cell carcinoma of the lung has been well documented.[1] Such results have encouraged development of aggressive chemotherapeutic protocols with or without irradiation therapy which may have the potential for leukemogenesis. We have recently had the misfortune to observe the rapid development of acute leukemia in such a situation.

This is the story of a 52-year-old white male who was found at thoracotomy to have a small cell carcinoma of the left lower lobe with no evidence of metastases to liver, bone marrow, or brain. Hematologic findings and treatment are summarized in table 1. The patient received three induction courses of chemotherapy three weeks apart consisting of the following: cyclophosphamide, 1,000 mg/m^2 day 1; doxorubicin, 50 mg/m^2 day 1, vincristine, 1.5 mg/m^2 day 1, and VP16-213, 60 mg/m^2 daily for 5 days. Subsequently, 3,000 rads were administered to the primary tumor, mediastinum, supraclavicular areas, and whole brain. Thereafter, maintenance chemotherapy was given using cyclophosphamide, 750 mg/m^2, doxourbicin, 50 mg/m^2, vincristine, 1.5 mg/m^2, and VP16-213, 250 mg/m^2, all of which were administered on day 1 of each 3-week cycle.

An objective response was observed seven weeks after the start of therapy.

Approximately 10 months from the onset of therapy, the patient complained of severe anorexia, weakness, malaise, and hemoptysis; anemia, thrombocytopenia, and leukocytosis were observed (table 1). A bone marrow specimen showed 70-80% cellularity; 53% of the nucleated cells were blasts, 24% promonocytes and monocytes. Fifty percent of the leukemic cells were Sudan black B positive, 10% showing heavy localized staining, 40% a more diffuse granular positivity of varying intensity. Virtually all cells were positive for alpha naphthyl acetate esterase and the staining reaction was almost totally inhibited by fluoride. The cytologic features in Wright's stained smears suggested myelomonocytic leukemia but on the basis of the esterase reactions a diagnosis of acute monocytic leukemia was made. The morphological and histochemical features were in no way suggestive of marrow and blood involvement by the lung cancer. Chromosomal analysis was not performed.

Bronchoscopy was performed because of persistent hemoptysis; no tumor or bleeding source was identified. Antileukemic therapy was initiated; the patient died of sepsis and pulmonary hemorrhage on the fourth hospital day, approximately 10 months from the onset of therapy, without evidence of recurrent small cell carcinoma of the lung. Postmortem examination was not performed.

The leukemogenic potential of antineoplastic therapy has been appreciated in a variety of hematologic and nonhematologic malignancies.[2, 3] Recently, five cases of acute nonlymphocytic leukemia have been reported in patients treated for small cell carcinoma.[4-7] These patients were treated with combination chemotherapy which included alkylating agent(s) and each received irradiation therapy (table 2). A complete remission of the lung cancer had occurred in all of them before leukemia was diagnosed. The times to the development of leukemia from the onset of therapy were 24-38 months; chemotherapy had been discontinued 4-13 months prior to the diagnosis of leukemia. A persistent anemia was observed in two patients[5, 6] whereas no hematologic abnormalities were noted to herald the onset of acute leukemia in the other patients.[4, 7]

Our patient also received combination chemotherapy as well as irradiation and a complete remission of the lung cancer occurred. In retrospect, a preleukemic syndrome characterized by persistent anemia began 5 months after the start of therapy. Unlike the previous reports,[4-7] however, anemia and development of overt leukemia occurred more rapidly; these features were observed less than 11 months from the onset of therapy (table 2). The latency period in the five reported patients was ~ 2-3 years which is similar to that previously observed in patients with a variety of tumors in which therapy-related leukemia occurred (mean 5.0-6.4 years, range 11-182 months).[2, 3]

The rapidity of development of leukemia in the current case may be related to the particular drug dosing or scheduling. Also, the possibility of an interaction with irradiation and chemotherapy should be considered since irradiation has been part of the treatment program in all of the reported cases to date (table 2). This is reminiscent of the greater propensity for the development of leukemia in patients with Hodgkin's disease who have been treated with both radiation therapy and chemotherapy rather than either alone.[8] The current case appears to illustrate the potential for rapid development of acute leukemia following aggressive combined modality treatment of small cell carcinoma.

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TABLE 1
Hematologic Parameters and Cumulative Drug Dosage

	Hematologic Parameters					Cumulative Drug Dosage (mg)*				
Date	Hgb (g%)	WBC ($x10^3/mm^3$)	Neutrophiles (%)	Blasts (%)	Plts ($x10^3/mm^3$)	CTX	ADR	VCR	VP16-213	Comment
11/27/80	13.7	10.2	80	—	434	—	—	—	—	pretreatment
04/27/81	10.2	5.8	—	—	230	8,207	437	14	2,328	2 unit RBC
06/05/81	8.9	2.1	—	—	125	8,922	521	16	2,806	2 unit RBC
08/14/81	7.9	4.7	17	—	310	11,854	727	16	3,782	2 unit RBC
09/02/81	6.5	1.8	64	—	48	11,854	727	16	3,782	4 unit RBC
09/25/81	9.8	149.0	2	67	55	11,854	727	16	3,782	overt leukemia

* CTX — cyclophosphamide; ADR — doxorubicin; VCR — vincristine

TABLE 2
Reported Cases of Leukemia in Small Cell Carcinoma of the Lung

								Time to Leukemia		
Ref.	Age	Sex	Disease Extent	Radiation	Chemotherapy (duration)	Best Response	Leukemia	from diagnosis	after stopping Rx	Survival after Leukemia
4	59	M	extensive	yes	C,CCNU,M (23 mo.)	CR	AML	36 mo.	13 mo.	3 wk.
5	59	F	limited	yes	M,V,VP,C,A (16 mo.)	CR	AMML	24 mo.	8 mo.	10 mo.
6	65	M	extensive	yes	C,CCNU,M P,A,V (27 mo.)	CR	EL	34 mo.	7 mo.	6 mo.
7	63	F	extensive	yes	C,A,VP, BCNU,V,P (26 mo.)	CR	ANLL	38 mo.	12 mo.	7 mo.
7	58	F	limited	yes	C,A,VP BCNU,V,P (25 mo.)	CR	EL	29 mo.	4 mo.	9 mo.
present case	52	M	limited	yes	C,A,V,VP (10 mo.)	CR	AMOL	10 mo.	—	4 d.

Abbreviations: C = cyclophosphamide, A = doxorubin (Adriamycin),V = vincristine, VP = VP 16-213, CCNU = 1-(2-chloroethyl)-3-cyclohexyl-l-nitrosourea, M = methotrexate, P = procarbazine, BCNU = 1,3-bis (2-chloroethyl)-2-nitrosourea, CR = complete response, AML = acute myeloblastic leukemia AMML = acute myelomonocytic leukemia, EL = erythroleukemia, ANLL = acute non-lymphocytic leukemia, AMOL = acute monocytic leukemia.

SCIENTIFIC ARTICLE

Recent Changes in the Supply and Distribution of Physicians in North Carolina

Edward F. Brooks, M.B.A. and
Jessica R. Whitsel, B.A.

IN the January 1983 issue of this *Journal*, Dean Stuart Bondurant of the University of North Carolina School of Medicine asked "Is North Carolina Educating Too Many Physicians?"[1] He answered his question by saying that the state is not producing an excess of physicians and cited some general medical education and manpower supply data to support his conclusion. A related question to which Dr. Bondurant also alluded and which is equally crucial is, "Are there too many physicians in North Carolina?" An analysis of the supply and distribution of physicians in the state indicates that North Carolina is not "over-doctored" compared with the United States and the South. The analysis also suggests that the geographic maldistribution of physicians that has existed in North Carolina (and throughout the United States) for decades has moderated during the past few years. The ratio of physicians to people living in the state's most sparsely populated counties is improving.

Concerns about a possible oversupply of physicians are important because, as Dr. Bondurant noted, "it is highly unlikely" that an excess of medical doctors "will improve the quality or lower the cost of care for our patients."[1] In fact, some observers take the argument a step further by claiming on the basis of empirical studies that costs of care actually increase with a growing supply of physicians.[2, 3] In any case, the health care benefits that conceivably could result from exceedingly large numbers of physicians may be negligible while the costs of care under those circumstances may be unnecessarily high. Much is at stake, then, in these questions about the supply and distribution of physicians in North Carolina.

Ironically, this issue results from policy-makers' and medical educators' successes in dealing with what was generally perceived to be a severe shortage of physicians in the United States only 20 years ago. A variety of steps were taken in the 1960s and 1970s to increase the overall supply of medical manpower and to improve its geographic and specialty distribution. At the national level, legislation and regulation promoted the education of larger numbers of physicians, notably those in primary care. Barriers were lowered so that greater numbers of foreign medical graduates could practice in the United States. The National Health Service Corps was implemented as a result of "growing national and Congressional concern about the adverse effects of geographic maldistribution of health manpower on access to care, particularly for low-income rural and inner-city populations."[4] In the state, the North Carolina Area Health Education Centers (AHEC) program was established to decentralize the education of physicians and other health professionals "to upgrade the expertise, increase the numbers, and improve the geographic and specialty distribution of health manpower of all types."[5] The new four year medical school at East Carolina University was established in the mid-1970s. The Department of Human Resources' Office of Rural Health Services developed an active and effective physician recruitment program and has helped over 30 rural communities establish primary care centers.

This list of state and national actions to redress the physician supply and distribution inadequacies of 20 years ago is far from exhaustive. North Carolina and the United States have invested heavily in educational and programmatic efforts to increase the quantity of medical manpower and to ensure that more providers practice in formerly underserved areas. The investments have paid off at least in terms of supply. The question is, "Have they paid off too well?" Does North Carolina have too many physicians or is it likely to be oversupplied in the foreseeable future? This concern is being expressed in part because, as Dean Bondurant noted, there are "several communities (in) the state where there is evidence of satiation."[1] Nationally, the concern was generated or, at least, exacerbated by the 1980 Report of the Graduate Medical Education National Advisory Committee in which a surplus of 70,000 physicians was predicted for the United States by 1990.[6] As the supply of physicians in the state has grown at approximately the same rapid rate as the national supply in recent years, North Carolinians have reason to be concerned (table 1).

With respect to distribution, the concern is, "Are more physicians practicing in the state's rural areas?" If so, it becomes necessary to assess how this improvement is being made. One frequently expressed theory is that rural communities are benefiting from a "sandpile effect." Persons holding this theory assume that the vast majority of physicians want to practice in suburban and urban settings where most of their peers and most of the best equipped medical facilities are located. As the supply grows, according to the theory, most physicians locate in densely populated areas but a few slip down the

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From the Health Services Research Center, University of North Carolina, Chapel Hill, NC 27514.

TABLE 1
The Supply of Active, Non-Federal, Non-Resident Physicians in North Carolina and the United States, 1977 and 1980

	1977	1980*	Percent Change
North Carolina†	6,195	7,328	18.3%
United States	362,043	417,758	15.3%

* The most recent year for which American Medical Association data are available for the United States.
† The North Carolina data are from files maintained by the Health Services Research Center, University of North Carolina at Chapel Hill.

sides of the growing "pile" and settle in small towns. If this sandpile effect is taking place, then rural gains are being made at the expense of more urban areas where surpluses of physicians are likely to occur. The data presented here, therefore, address both the overall supply question and the issue of rural/urban physician distribution in North Carolina.

Methods

Data on the number and location by county of physicians in the state were analyzed for the years 1977 and 1982 to assess supply and distribution changes that occurred over the five year period. These data were obtained from health professions data files maintained by the Health Services Research Center of the University of North Carolina at Chapel Hill in cooperation with the State's health manpower licensing agencies. Data on county populations for the two years were estimated using straight-line interpolations from the 1970 and 1980 censuses.

For analysis purposes, the state was divided into three groups of counties — the most heavily populated group (34 counties*), the next most heavily populated (33), and the least heavily populated (33). The map in figure 1 identifies each county by group.

There are certain drawbacks to using counties or county groups as units of analysis. Some heavily populated counties contain sparsely populated areas that by many standards would be considered "rural." Conversely, some counties with small censuses have densely populated areas which qualify as "urban" by many standards. Nevertheless, the general population differences between the most and least populated counties were considerable as the data in table 2 indicate.

Over 70 percent of the state's inhabitants resided in its 34 largest counties; only 8.2 percent were in its 33 smallest counties. In 1982, the smallest of the most heavily populated counties had two and a half times as many residents (61,736) as the largest of the least populous counties (24,157). The contrasts are so marked — the counties in the least heavily populated group were so small while those in the most populated group were relatively so large — that for the purposes of this analysis, it is appropriate to label one "rural" and the other "urban."

In order to assess the changes in the state's geographic distribution of physicians, the supplies and physican/

TABLE 2
Selected Characteristics of the Most, Next Most, and Least Heavily Populated Groups of Counties in North Carolina, 1982

County Groups	Total Population	Mean	Range
Most Heavily Populated	4,237,400	124,629	61,736-414,192
Next Most Populated	1,300,600	39,412	25,747- 61,055
Least Populated	493,500	14,955	4,009- 24,157

population ratios in the rural and urban county groups ar compared in 1977 and 1982. An assessment of the relativ adequacy of North Carolina's overall supply of physician is made by comparing the state's physician/population rati with that of the United States and the South in 1980 (th most recent year for which national data are available). It i recognized that physician/population ratios do not take int consideration the type of medical functions or level o productivity of individual providers and as such thes ratios' utility in estimating level of supply or adequacy o distribution is limited under some circumstances. However, physician/population ratios are adequate for the kinds o overall comparisons on which this analysis focuses.

Results

There is no one right or, at least, generally agreed upo answer to the question, "Does North Carolina have to few, enough, or too many physicians?" There are so many ways of addressing the question and so many standards that can be used in determining the adequacy of supply that any absolute answer would be extremely complex and subject to unending criticism as was, for example, the GMENAC report on the nation's supply of physicians. It remains, then, to deal with the issue in relative terms by comparing North Carolina's medical doctor supply with that of the United States and the South.

There was one active, non-federal, non-resident physician for every 803 people in North Carolina, for every 729 people in the South,* and for every 639 people in the United States in 1980. Compared with the nation and region, this state had relatively few physicians. For primary care physicians (family physicians, general practitioners,

THE MOST, NEXT MOST, AND LEAST HEAVILY POPULATED COUNTIES IN NORTH CAROLINA, 1982

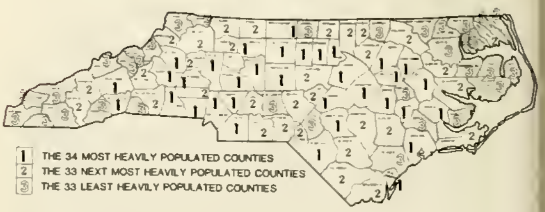
1 THE 34 MOST HEAVILY POPULATED COUNTIES
2 THE 33 NEXT MOST HEAVILY POPULATED COUNTIES
3 THE 33 LEAST HEAVILY POPULATED COUNTIES
1
2
3

Figure 1

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* Nash and Edgecombe Counties are included together in the most heavily populated group as the major city in the two counties, Rocky Mount, is on the Nash/Edgecombe border.

* Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia.

internists, and pediatricians) the population per physician in the state, the South, and the United States is 2,071, 2,074, and 1,811, respectively.

North Carolina's total physician supply has lagged behind the region and the nation. Therefore, it would not be possible to support the position that this state was oversupplied with medical manpower without also concluding that the United States had too many physicians in 1980. Yet even the authors of the GMENAC report drew no such conclusion about the nation despite their dire predictions for 1990 and 2000. These comparative data suggest that in 1980 North Carolina did not have too many physicians and that, in fact, it is relatively under-supplied.

The second issue addressed by this analysis concerns the rural/urban and specialty distribution of physicians within the state (table 3). In 1977, 83.4 percent of the state's physicians worked in the most heavily populated counties (with 70.3 percent of the 1977 North Carolina population). Only 4.0 percent of the state's physicians were in the group of least populated counties (with 8.3 percent of the total population). In 1982, 82.5 percent of the active, non-federal physicians in North Carolina worked in the 34 most heavily populated counties in which 70.3 percent of the state's citizens resided. By contrast, only 4.2 percent of the physicians worked in the 33 least populated counties which had 8.2 percent of the population of the state. These percentages suggest a very slight trend toward a more balanced rural/urban distribution even though nearly 80 percent of the state's net increase of physicians between 1977 and 1982 took place in the urban counties.

TABLE 3

Number (and Percent) of Physicians in the Most, Next Most, and Least Heavily Populated County Groups in North Carolina, 1977-1982*

Physicians and Years	County Groups Most Populous	 Next Most Populous	 Least Populous	North Carolina
Primary Care				
1977	1,815 (76.4%)	404 (17.0%)	158 (6.6%)	2,377 (100.0%)
1982	2,200 (74.3%)	528 (17.8%)	231 (7.8%)	2,959 (99.9%)†
Other Specialists				
1977	3,353 (87.8%)	376 (9.9%)	89 (2.3%)	3,818 (100.0%)
1982	4,246 (87.5%)	506 (10.4%)	100 (2.1%)	4,852 (100.0%)
All Physicians				
1977	5,168 (83.4%)	780 (12.6%)	247 (4.0%)	6,195 (100.0%)
1982	6,446 (82.5%)	1,034 (13.2%)	331 (4.2%)	7,811 (99.9%)†

* The data in this table refer only to active, non-federal, non-resident physicians. Residents are excluded because to do otherwise would bias the within-state data in favor of those counties with teaching or other major hospitals which employ disproportionately large numbers of residents.

† Excludes seven physicians for whom 1982 location information is unknown.

In the five years between 1977 and 1982 the average number of North Carolinians per physician decreased from 908 to 772. The supply of physicians grew faster than the state's population. In order to describe this change more usefully, however, it is helpful to distinguish between primary care and specialist physicians and between urban and rural counties.

Although the number of primary care physicians practicing in the 34 urban counties increased substantially by 385 (21.2%) between 1977 and 1982 (table 4), the urban primary care physician/population ratio changed relatively slightly from 1/2178 in 1977 to 1/1926 in 1982. The number of primary care physicians in the 33 most rural counties grew by 73 during the five years, but as the rate of growth (46.2%) was so much greater than that which took place in the urban counties, the rural physician/population ratio decreased sharply from 1/2955 in 1977 to 1/2136 in 1982. In fact, by 1982 much of the difference in the urban and rural physician/population ratios had been eliminated. This finding indicates that the "sandpile effect," alluded to earlier, is not occurring among primary care physicians in North Carolina. Rural counties generally are not obtaining the occasional primary care physician who, for whatever reason, decides to leave the cities and suburbs of the state. To be sure, only about one-fifth as many of the net increase of primary care physicians located in the rural counties (73) as in the urban counties (385) between 1977 and 1982. However, the rate of growth in the supply of these physicians was over two times greater in the rural (46.2%) than in the urban (21.2%) counties. The evidence suggests, therefore, that the progress in the least heavily populated counties was not made at the expense of the urban counties.

TABLE 4

Number of People per Active, Non-Federal, Non-Resident Physicians in the Most, Next Most, and Least Heavily Populated County Groups in North Carolina, 1977-1982*

Physicians and Years	County Groups Most Populous	 Next Most Populous	 Least Populous	North Carolina
Primary Care				
1977	2,178	2,985	2,955	2,367
1982	1,926	2,463	2,136	2,038
Other Specialists				
1977	1,179	3,207	5,247	1,473
1982	998	2,570	4,935	1,243
All Physicians				
1977	765	1,546	1,891	908
1982	657	1,258	1,491	772

* Excludes seven physicians for whom 1982 location information is unknown.

One would expect that the primary care physician/population ratio for the group of mid-sized counties would be between the ratios of the urban and rural counties. Interestingly, that is not the case. In both 1977 and 1982, the mid-sized group had the highest ratio. There were more people per primary care physician in these counties than in either the rural or urban counties. The possible explanation that this situation may be an artifact of dividing the state's counties into three groups does not hold. It is conceivable that the largest of these counties should have been included in the urban group while the smallest should have been grouped with the rural counties. However, some of the smallest of these mid-sized counties have the lowest physician/population ratios and some of the largest have the highest ratios. It appears, then, that the relatively high primary care physician/population ratio of the mid-sized counties does not result from the way the counties were grouped. There actually are more people per primary care physician in these counties than in both the less and more heavily populated counties. This finding raises questions about whether the efforts in North Carolina to more evenly distribute primary care physicians have disproportionately benefited the state's most rural residents as compared with those living in the mid-sized county group.

The total supply of primary care physicians in North Carolina increased by 24.5 percent from 1977 to 1982; the supply of specialists by nearly 27.1 percent. (If obstetrician-gynecologists are included as primary care physicians, the rate of growth changes only very slightly. In this case, the supply of primary care physicians increased by 25.0 percent while the supply of specialists grew by 27.0 percent.) The large majority of the entire net gain of specialists (893 of 1,034) was in the most heavily populated counties where the specialist/population ratio declined from 1/1179 to 1/988 — a 15.4 percent change. The ratios also decreased in the mid-sized (19.9%) and rural (5.9%) counties. The rate of decrease was smallest in the least heavily populated counties. Unlike primary care physicians, therefore, the distribution of specialists remains heavily skewed toward the most populous counties. The specialist/population ratio in the rural counties (1/4935) was nearly five times the urban county ratio (1/998) in 1982.

Discussion

This overview indicates that considerable progress has been made recently in improving the rural/urban distribution of physicians in this state without increasing the overall supply to the point where, relative to the South and the nation, North Carolina is "over doctored." The most marked change in geographic distribution occurred with primary care physicians for whom even distribution is most desirable. Specialists continue to locate predominantly in the urban counties where most of the larger hospitals and most of the advanced resources exist to support their practices. The evidence supports Dr. Bondurant's observation that North Carolina has "already moved far toward correcting the physician shortage of the 1950s and 1960s." The evidence further supports the considerable progress that has been made in correcting the state's heretofore chronic urban/rural imbalance in physician distribution.

This overview also indicates that the health professions data collected and maintained by the cooperative efforts of the State's health manpower licensing agencies and the Health Services Research Center can be analyzed to address issues of major importance to policy and decision-makers and educators in the state. Much more detailed analyses of these data are needed to answer specific questions about location patterns, movement of physicians within the state, and the adequacy of the supply of specific types of physicians in specific areas of the state. With this information, legislators, government officials, educators, and program administrators should be able to institute even more effective efforts to provide North Carolinians with the most equitably distributed, appropriate supply of physicians possible.

Acknowledgment

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Cost-Effective Medical Care Manual

The Committee on Cost-Effective Medical Care

The Committee on Cost-Effective Medical Care of the North Carolina Medical Society has produced a manual outlining the steps to be taken in forming a partnership between doctors, health providers, and consumers to control health care costs. A copy has been sent to each county medical society. A condensed version of the manual follows.

Introduction

THE North Carolina Medical Society's Committee on Cost-Effective Medical Care represents a public commitment by this state's physician community to join other health providers and consumers as partners in addressing the major issue of escalating health costs. We recognize and support the premise that local problems require local solutions. Our primary function will be that of encouraging the formation of local medicine/business health coalitions across the State. It is our intent to be a resource to these local initiatives through the provision of technical assistance and by serving as a focal point for the dissemination of information to these local groups and to other interested parties. Such information will include the sharing of ideas, problems, successes, and other materials among the local coalition initiatives. We will also provide, on an on-going basis, information regarding major health care issues and health cost approaches from around the nation. Additionally, the Society will maintain an extensive resource file on model programs, protocols, data analysis techniques, sample educational brochures, malpractice information, and other such material which may be of interest to the local initiatives.

It is the strong and unanimous opinion of the Committee on Cost-Effective Medical Care that the complexity of the health cost issue requires that a forum exist that will allow a community to involve its full resources in seeking appropriate solutions. The health coalition is that forum and involves physicians, business/industry, insurers, and hospital representatives sharing their perceptions and talents in a partnership effort to make health care more cost-effective in their community. We urge that you begin to work on developing this partnership for health care.

This brief manual has been compiled to assist you in initiating a health coalition in your area. Nothing contained herein represents a mandate, only suggestions, which you may choose to adopt, modify, or reject as appropriate to your needs. A member or members of the Committee will be in touch with you in the near future and the full resources of the Committee will be available to you in getting your local coalition started and maintained. There is a significant amount of resource material available for your use and we urge you to take advantage of it.

If we can answer any questions or provide any assistance regarding the establishment of a local health coalition in your community, please contact any of the members of the Committee on Cost-Effective Medical Care or the North Carolina Medical Society Office at 919/833-3836.

Local Medicine/Business Coalitions

What Are They?

— Pooling of local resources to discuss problems related to health delivery and costs and to seek local solutions to local problems

— Providers and consumers working as partners toward common goals

— A recognition that no group working alone can develop solutions that are as potentially effective as those developed together

— A commitment by a local community to find solutions to the health issues facing their population

Who Are They?

— Membership will vary according to the local environment

— To be effective, three constituencies *must be present:*
  — Physicians
  — Business/Industry (may be large or small)
  — Hospitals

— Large business is *not* mandatory — small businesses have the same concerns as those of larger firms

— Other members may include civic leaders, state and local government, insurers, and/or long term care industry among others

— *Key ingredient:* Concerned people sit down to discuss problems and seek solutions *together*

Why Establish a Local Health Coalition?

— Creates a forum for sharing information on important health care issues

— Creates opportunities to educate consumers and providers

— Brings full resources to bear in seeking solutions

— Results from partnership potentially greater

— Local problems require local solutions

Basic Thrusts of Local Health Coalition

— Identification of health-related problems and seek approaches to resolve these problems

— Education through joint discussion of viewpoints by all parties

— Increasing cost-awareness of health care providers and consumers in the community

— Coordination of approaches to solve problems

— Action to reduce inefficient health expenditures

— Identification for local health needs-based planning

Major Causes of Escalating Health Costs

— Advancements in medical technology

— Increased labor costs

— Government regulation (State and Federal)

— Unhealthy lifestyles

— Defensive medical/malpractice

— Cost-shifting

— Past inflationary pressures

— Inefficient utilization of health delivery system

— Lack of physician awareness of the costs generated by their decisions

— Isolation of providers and consumers from direct impact of health costs due to first dollar coverage provisions

— Increased percentage of population 65 + years of age requiring an increasing percentage of available health resources

— Unrealistic consumer demand

— Insurance coverage provisions which encourage the use of the most expensive treatment settings over less costly options available

Sample Approaches for Containing Health Costs

I. Physician Initiated

a. Reduction of elective Friday/Saturday admissions unless treatment scheduled over weekend

b. Increase the use of outpatient pre-admission diagnostic testing on all elective admissions

c. Encourage sharing of diagnostic test results by referring, attending and consulting physicians handling the same case

d. Develop and institute an economic grand rounds protocol for use in acute care hospitals

e. Periodically review copies of their patients' hospital bills

f. Address issues of defensive medicine/malpractice and their impact on health costs

g. Develop and distribute (as information) a list of surgical procedures which could be appropriately performed in an ambulatory setting unless medically contraindicated *or* no ambulatory facility available

h. Develop appropriateness screens for emergency room utilization

II. Hospital Initiated

a. Utilization of early discharge indicators to improve discharge planning process

b. Periodically provide attending physicians with copies of their patients' hospital bills

c. Post most common hospital charges in physician's lounge, nursing stations, and other appropriate areas of the hospital

III. Jointly Initiated

a. Increase provider and consumer awareness of alternatives to inpatient treatment (coalition)

b. Increase cost-awareness/sensitivity of physicians and other health providers (physicians/hospitals)

c. Review hospital by-laws and admission policies to identify inappropriate post-admission testing or standing orders (physicians/hospitals)

d. Develop a standardized "return to work" form indicating the date the employee could return to work, level of effort the employee should expend (if not able to return to his/her previous job), and length of time before full activity could be resumed (business/physicians)

e. Implement pre-admission screening (physicians/hospitals)

f. Develop in-house corporate wellness and counseling programs (coalition)

g. Expand cost-sharing into employer health benefit programs (business/insurer)

h. Increased consumer health cost-awareness education (coalition)

Initiating a Local Health Coalition

Preparation:

— Contact your local chamber of commerce to obtain a list of the major employers in your area

— Identify the Chief Executive Officer (CEO) and the individual most closely involved in the health benefits area for each employer

— To extent possible, get background information on each of the major employers (including, but not limited to):

- — Type of product or service produced
- — Number of employees
- — Headquarters location
- — Union or non-union
- — Benefit programs and name of carrier

— Initiate early contact with hospital administrators

Initial Contact

— Send a letter over the local Medical Society President's signature expressing your desire to meet with the hospital administrator or CEO to hear the concerns and perceptions of the hospital and business community and to explore the possibility of developing a local medicine/business health coalition. Indicate that you will be contacting him/her by telephone within two weeks to set up a time to meet which is mutually acceptable. (If you know the CEO/administrator personally, a telephone call may be an appropriate first contact.)

— Telephone the CEO/administrator within the time period indicated and set up a firm appointment to meet with him.

— Follow up your telephone call with a letter confirming your meeting time and expressing your appreciation for his time and your interest in hearing his/her perceptions.

First Business Visitation

— You might want to meet with more than one CEO/administrator at a time depending on your local situation. If this is the case, you should limit the number to no more than five at any one time. Meet with hospital and business representatives separately at first.

— Make sure that you do not have too great a number of physicians at your initial meeting.

— Your physician contact or contacts should have reviewed all background material available on the firms you will be meeting.

— Keep the meeting informal.

— Reaffirm your intention of listening to the problems and perceptions of the corporate and hospital representatives.

— LISTEN, LISTEN, LISTEN

— if they are right you have learned something of value

— if they are wrong there is time to educate later

— Once the business or hospital representative(s) have finished their presentation of problems and perceptions, explain the concept and appropriateness of establishing a health coalition in your area. You can point to the growth of these groups in the State and around the nation as a means of addressing local health needs at the local level. Indicate your plan to convene a joint meeting of physicians, business, and hospital representatives in the near future to explore the possibility of setting up such a collegial group in your area.

— Follow up with a letter thanking the representative(s) for their time and sharing their thoughts with you. You can also let them know who you have met and plan to meet with on this issue. Establish a tentative date and place for the first joint meeting.

First Joint Meeting

— Select a date four to six weeks in advance and send a letter to each of your initial contacts indicating your intent to hold the first joint meeting.

— Follow up your letter with a telephone call to confirm the attendance on the selected date.

— Send out an agenda prior to the meeting along with any additional information which might be of benefit to the invitees.

— The following steps should occur at the first meeting:

— Introduce those in attendance

— State the purpose of the meeting

— Round table discussion to share perceptions of each representative (physician, hospital, and business)

— Discuss areas which could lead to problem resolution

— Decide whether a second meeting would be desirable

— *Set a date* for the next meeting no more than two months away

— Have a social event to follow meeting (dinner, cocktails, etc.) to allow for further get acquainted activity by the members.

— Send out the minutes of the meeting within two weeks and any information requested as soon as possible after meeting. Cover letter to minutes should be positive and appreciative in tone.

The above steps should get you started and each successive meeting should more specifically identify problem areas and generate action to resolve those problems. The key factors in being successful are:

— Frequent and substantive meetings

— Maintenance of a collegial atmosphere

— Always be headed in a defined direction

— Maintain momentum

Caveats

1. This effort will require patience — no quick-fix solutions

2. Need to develop the art of listening

a. You will hear erroneous perceptions

b. You will hear perceptions which are directly opposed to your views

c. You will hear perceptions which are new, but may nevertheless be correct (in whole or in part)

d. Your willingness to listen will enhance your credibility and effectiveness in finding solutions for your community

3. Avoid a defensive posture — there is sufficient time to educate when appropriate

4. You should anticipate some adversarial bias — a great deal of unanswered criticism has taken place over the past several years

5. Understand that a comprehension of the complexity of the health system and its financing mechanism will not be held by many of the members when your group gets started

6. If we are to be successful, some changes in the status quo have to occur — look on this as an opportunity to improve cost-effective health care delivery in your community

7. The bottom line is that the private sector has to get this job done or the government will again attempt to do it for us

The committee report also includes:

1. Initial contact letter from the county medical society

2. Follow up letter to initial meeting

3. Sample agenda for first joint meeting

4. Suggested approaches to education and public relations

a. develop educational brochures

b. develop a coalition speakers' bureau

c. sponsor community health projects

5. A list of medicine/business health coalitions already in existence in North Carolina

Committee on Cost-Effective Medical Care of the North Carolina Medical Society

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TOXIC ENCOUNTERS

Please Pass Me The Onions and The Socks — Lidocaine Toxicity

Ronald B. Mack, M.D.

NO kidding, what should you do for an infant who seems to be in pain from a problem in the mouth such as teething, herpetic gingivostomatitis, herpangina? In our clinic some of the mothers would attempt to relieve this pain by putting onions in the child's socks or in a hat for the child's head. That's alright with me — get rid of evil spirits or evil humors with onions if you want to or with leeks, scallions and such; but don't use *viscous lidocaine* for this purpose in little people.

Lidocaine hydrochloride is an aminoacyl amide in rather widespread usage as a topical as well as local injectable anesthetic. It is used as well as an antagonist against certain cardiac arrhythmias. One of the more popular topical forms of this preparation is Xylocaine 2% Viscous which is to be used to produce topical anesthetic relief of inflamed or otherwise irritated mucosal lesions of the mouth and oropharynx. It also is available in a 4% topical solution, a 5% ointment, and a 10% oral spray. So far these products require a prescription but who knows for how long? It is of interest that the manufacturer does not recommend its use for teething problems.

As you recall from Pharmacology 101, Professor Phenyl Von Lactate from St. Myron-by-the-Privy University told us that there were two main types of local anesthetics: (1) *esters* — usually hydrolyzed in the plasma by pseudocholinesterase and (2) *amides* — usually metabolized by the liver. A third type described by the Professor was large oral doses of Peppermint Schnapps. Lidocaine is an *amide* and thus is broken down in the liver into two major metabolites which have antiarrythmic action and are probably responsible for any of the central nervous system (CNS) effects this drug has. Although Lidocaine is easily absorbed from the GI tract, less than one-third of the drug is actually bioavailable because of its high *first-pass* hepatic metabolism. For those of you who took Pharmacology when I did (remember those good old days when our Professors were trying to turn lead into gold!!), the first-pass effect refers to the fact that drugs taken orally must first pass through the gastrointestinal wall and then the portal system after absorption. When extensive metabolism occurs at this stage and eliminates a fairly large portion of the drug during its first circulation or pass through the gut wall or liver, a first-pass effect has occurred. This rather large increase in metabolism by the gut or liver is due to a very high initial drug clearance by these organs. In any event, the end result of a high first-pass effect is to make less of the drug available to do its duty. Most medications that are absorbed through oral, nasal, pharyngeal or esophageal mucous membranes do not suffer a high first-pass effect. (Gosh, this is so confusing. I thought Knute Rockne of Notre Dame invented the first-pass effect.) When lidocaine is applied to the mucous membrane, blood levels of this drug are close to those levels after intravenous injection. It is distributed to the liver, heart and lungs within several minutes subsequently to be stored in adipose tissue. If the topical preparation is swallowed, blood concentrations increase rapidly in the first 10 minutes, reaching a peak in 40 minutes.

The principal toxic effects of lidocaine overdose are on the CNS. After all, local anesthetics are given to interrupt pain impulses but at the same time interrupt nerve transmissions in those body organs that they interface. Based on animal experiments, it is believed that the CNS effects are secondary to the blocking of inhibitory cortical synapses by the local anesthetic. The typical pathopharmacological sequence of the clinical features of local anesthetic toxicity are stimulation of the CNS followed by depression of the CNS. Almost always CNS depression is preceded by excitation. This excitation phase includes early non-specific features such as shivering, yawning, salivation, loquaciousness, tinnitus, anxiety, tremor, mania and drowsiness. With the more severe overdoses, convulsions may be the first sign of trouble. Unconsciousness and coma may ensue which may progress to respiratory arrest and exit to that big Pediatric Clinic in the Sky. Some authors advise extreme caution in using topical anesthetics in infants because the relatively immature developing CNS may be more vulnerable to the drug's adverse effects. In the typical chain of events of CNS excitation followed by CNS depression, the next frightening event is inhibition of cardiovascular function. Cardiovascular dysfunction secondary to lidocaine overdose relates to two major problems: *depression of myocardial excitability* and thus efficiency, and vasodilation, primarily arteriolar. The pharmacologic effects of myocardial depression and decrease in electrical activity contraction, conduction rate and vasodilation produce the clinical manifestations of atrioventricular block, bradycardia, hypotension and cardiac arrest. It is possible, according to some experts at least, to correlate serum lidocaine concentration and adverse effects, e.g., at about 5-6 μg/ml the clinical features can be quite subtle — mild drowsiness or mild excitation (therapeutic level = 1 to 5 μg/ml). As the blood level rises above 5 μg/ml, CNS toxicity becomes more probable. There is some good news to report: *hypersensitivity reactions* to lidocaine are allegedly quite uncommon because lidocaine is an *amide*

From the Department of Pediatrics, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC 27103.

and hypersensitivity problems occur mainly with the ester type, such as procaine and tetracaine.

What should we do when confronted with a patient with lidocaine toxicity? Chances are you will have to act quickly — no time for laboratory confirmation. As with most toxins, treat the patient not the poison. Needless to say, secure the airway first. Convulsions are best treated with intravenous diazepam. Some people recommend ultrashortacting barbiturates such as thiopental to stop the seizures but how many emergency rooms have thiopental just waiting around to be used? Cardiovascular insufficiency can be treated with IV fluids (be careful of overload) and a vasopressor such as ephedrine or metaraminol (Aramine). You may need a defibrillator handy as well.

It is my opinion that the primary health care practitioner has little or no reason to prescribe this drug to children: at best the anesthetic relief is short lived; if swallowed, the oropharynx may be anesthetized, making aspiration of food and liquids a possibility; if absorbed in quantity from the oral mucosa, oropharynx, or GI mucosa the adverse effects outlined are a real possibility especially when any single dose exceeds 5 mg/kg or even less. Who needs it? Use onions, as outlined, for the pain if you wish, but I would use neither. Both have their drawbacks. Instead, put a raw potato slice on the cheek on the side that the pain is on and pass the child under the abdomen of a male grandparent who is on the floor on his hands and knees and. . . .

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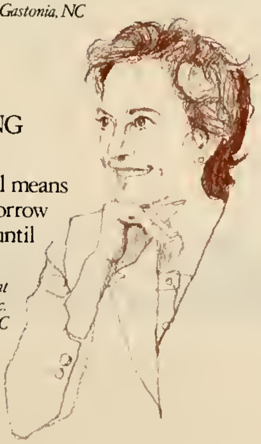

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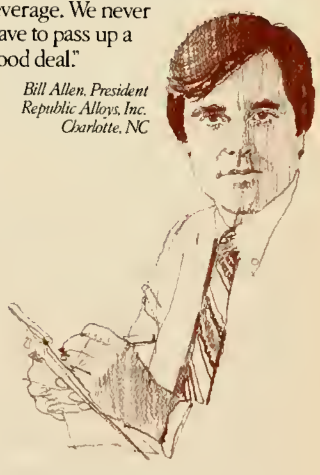

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CAROLINA HISTORY

The Case of the Fisherman with the Fast Pulse and the Beginning of Arrhythmia Surgery

Will C. Sealy, M.D.

AN uncontrollable fast pulse caused N.S., a 32-year-old fisherman, to seek help at Duke Hospital in February of 1968. The story of his ordeal is one of a series of coincidences that tells how he was cured of what was heretofore an incurable disorder, the re-entry tachycardia of the Wolff-Parkinson-White Syndrome. The story shows how his bad luck changes to good luck and how this same turn of fortune was experienced by his doctors. By curing N.S. of his fast pulse, final proof was obtained that a Kent bundle was the cause of the Wolff-Parkinson-White Syndrome and that the Kent bundle could be identified and destroyed, thus interrupting the circus movement and relieving him of his fast pulse.[1, 2] Of greatest clinical importance and interest was the fact that the success in curing N.S. of his fast pulse marked the beginning of arrhythmia surgery.

N.S.'s story of spells of fast pulse dated back to the age of four years. At first, they were not a great problem because of their infrequency and short duration. When N.S. was 32 years old, the spells became more frequent and began to last so long that his heart failed, and he became unable to work. In spite of the best medical advice and treatment the Duke heart specialist could offer him, he did not get better, even though he was treated for more than a month with Digitalis, Quinidine, and fluid control. The heart specialist asked a heart surgeon to see the patient, questioning whether an operation could be done to slow the pulse rate.

N.S. had not always been lucky. He was unlucky enough to have had a brain tumor and lucky enough to have had it completely removed by surgery. He then had a long run of good luck that dealt successfully with the bad luck of having a life-threatening arrhythmia. First, he was indeed fortunate that the large amount of Digitalis he was given on his hospital admission did not cause ventricular fibrillation as we now know it is prone to do in a patient with Wolff-Parkinson-White syndrome.

His second stroke of good luck was his admission to Duke at the time that clinical electrophysiology had just been started by an arrhythmia team led by Dr. Andrew Wallace from the Department of Medicine and Dr. Jack Boineau from the Department of Pediatrics.

Dr. Fred Cobb, then a senior fellow on Wallace's service, knew of the new methods of examination of a patient with a fast heart rate and arranged for a clinical electrophysiologic study. By 1983 standards, this was primitive, but in N.S.'s case it provided all the needed medical information. A stimulating electrode was first placed in the heart, pacing just the right atrium and then the right ventricle. Pacing the heart at a rate faster than his own rate with a simple pulse generator would break the fast heart rate and be followed by a slow, normal rate and rhythm for a few beats. However, the fast rate would always return. A careful study of many electrocardiograms as well as the simple electrophysiologic study indicated that N.S. had Wolff-Parkinson-White syndrome and that the cause of the fast heart rate was a Kent bundle connecting atrium and ventricle on the right side of the heart. The bundle of Kent plus the normal His bundle made two connections between the atria and ventricles which supported a re-entry fast heart rate, sometimes called circus movement tachycardia. Both bundles could be located at surgery with electrophysiologic methods; and we hoped that one or the other could be divided and thus interrupt the circus movement and cure the patient.

N.S.'s third lucky break was the response Drs. Wallace, Boineau, and Cobb got from the surgeons when they sought their help. This happened largely because Dr. Wallace, on joining the senior staff at Duke after his fellowship at the National Heart Institute, struck a bargain with the thoracic surgical laboratory of the author. The agreement was for Dr. Wallace to be given space and technical help if in return he would introduce the author and the author's laboratory fellows to clinical electrophysiology. The epicardial activation sequences of the heart were recorded in the operating room because reports from Holland,[3] in particular, showed how it was possible to use these measurements to find the invisible Kent bundle that was thought to be the cause of N.S.'s fast heart.

An operation for N.S. was discussed with him and his family. The decision was made, after a review of all the tests, to try to relieve his re-entry tachycardia, relying on epicardial activation maps to find the Kent bundle. If this failed, then the His bundle would be sought and divided, the two bundles being narrow points in the circus movement that the heart's impulse followed in causing the incessantly fast pulse rate.

An operation on the heart was then begun. After the chest was opened and the heart brought into view, Dr. Boineau, using electrophysiologic methods, was able to show that an impulse originating in the sinus node first entered the right ventricle at the right lateral wall at its connection to the atrium. This was in the area where Kent in 1914 had described a connection between the right atrium and right

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From the Division of Thoracic Surgery, Duke University Medical Center, Durham, NC 27710.

ventricle. Gaskell in 1882 reported that in turtles there were muscle bridges other than the bundle of His which connected the atrium and ventricle. Kent in 1892 believed and thought that he had demonstrated that mammals also had connections comparable to those found in turtles. In 1914 he described a right lateral muscle connection between the atrium and ventricle. While this description is now believed to have been in error, it led Wood and his staff to look closely for a bundle in this area when an autopsy was performed on a man known to have had in life the Wolff-Parkinson-White syndrome. They found a muscle bridge in the area described by Kent. The anatomic error of Kent was the guide to Wood's successful identification of the accessory bundle and the guide for the planning of N.S.'s operation.

When division was begun, the Kent bundle, as our studies of the few observations made on the anatomy had warned us, was neither visible nor palpable. The decision was made that its narrowest point had to be where it crossed the ring that supported the tricuspid valve. Thus the valve ring was uncovered from the outside of the heart, and a long incision was made dividing the connection of the right ventricle into the valve ring. To do this, the patient had to be placed on the heart lung machine. After repairing the heart, the patient recovered, the Kent bundle had been divided, and the signs and symptoms of the WPW syndrome including the ones on his electrocardiogram disappeared. The patient was able to return to his job as a commercial fisherman.

N.S.'s luck during the time covered by this story did change from bad to good. He survived and was cured of a brain tumor, tolerated a large quantity of a potentially dangerous medicine, and survived open heart surgery. Then, he finally became the first patient ever to be cured of the rare and exotic disorder that caused his fast heart rate. The givers of luck were generous to the doctors who were responsible for treating N.S. First, luck bestowed on them the greatest reward that doctors can ever receive, that is t cure a patient of what was heretofore an incurable illnes Another stroke of luck was the fact that Dr. Wallace, i starting his adult clinical electrophysiological studies a Duke, began them with the author in the author's laboratory. This was the way the Duke surgeons learned abou fast and irregular heart beats. Luck continued to smile whe Drs. Wallace and Boineau picked this time to do electrophysiologic studies in the operating room. The equipped the operating room with good electronic equipment which could be used in detecting the location of Kent bundle. Last of all, luck smiled equally on the doctor and the patient: the Kent bundle was in the place that wa the easiest of all to get to and to divide.

The case of the lucky fisherman with the fast puls served to whet the interest of the surgeon in rhythm problems of the heart, spurred the heart specialist into searchin for other patients with arrhythmias, and thus was the beginning of the encroachment on the last frontier of hear surgery: arrhythmia surgery. Although this essay ha emphasized the intangible quantity, luck, one should no lose sight of another abstraction, and perhaps the mor important — the imagination and the aggressive respons of the group of doctors to the challenge of N.S.'s persistently and heretofore unstoppable fast pulse.

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HOW HE DOES IT

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W. N. Corpening, M.D.

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From 12 Dudley Avenue, Granite Falls, NC 28630.

Features for Patients

Successes of and Challenges to Our State Health Department

Ronald H. Levine, M.D., M.P.H.

It is a pleasure and an honor to once again present a résumé of the successes and challenges your state public health agency has encountered over the past year in attempting to preserve, promote, and protect the health of North Carolina's citizens. This year, after providing the usual brief statutorily required synopsis, I plan to expand at some length upon the accomplishments of North Carolina's Medical Examiner System.

During 1982, a new unit was created to meet the ever increasing need to medically evaluate the risk of human exposure to the multitude of toxic and hazardous materials present in our environment. Investigative work of an environmental epidemiology nature is already one of the major areas of public demand for services from the Division.

Although the reported incidence of Rocky Mountain spotted fever fell to 227 cases in 1982, North Carolina has reported more cases of this tickborne rickettsial disease than any other state for the past 12 years. Research efforts to develop an effective vaccine to prevent this potentially lethal disease continue.

The immunization levels of our entering kindergarten and first grade students were the highest ever: 99.2% had met the requirements of the North Carolina immunization law. This record is a tribute to our physicians, local health departments, and school officials.

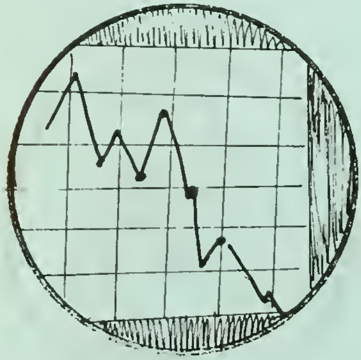
In 1982, 43,835 cases of gonorrhea were reported compared with 41,824 for 1981, a 4.8 percent increase. Sixty-one percent of these cases occurred in the 14 counties that have 100,000 or more population. The rates are nearly twice as high in the urban counties as in the more rural counties. North Carolina continues to rank in the top 10 states in the country in the number of reported cases of gonorrhea. Over thirty percent of the cases occur in young people ages 19 and below. Decreased manpower continues to be our most pressing problem in venereal disease casefinding. Efforts to obtain additional state support for casefinders have been unsuccessful because of the depressed economy. With our current staff, continued increases in morbidity can be expected.

North Carolina's infant mortality rate declined in 1981 to 13.2, its lowest ever, and our state ranking among all other states, while still poor, has improved so that now seven other states have higher rates. This represents a 25% decrease in the infant mortality rate in the last six years. During this time our perinatal care program has enjoyed much success. Most recently, we have expanded the network of prenatal clinics for indigent pregnant women to 89 of our 100 counties. The Tertiary Center Reimbursement Fund for mothers and infants requiring perinatal intensive care continues to be insufficient to permit reimbursement to all participating hospitals and physicians for the full fiscal year.

A serious recent concern has been the proposed parent notification rule which would destroy confidentiality of family planning services. Although we strongly oppose these rules, we are active in the support of parent activities on the premise that parents are the primary educators of their children and should be fully supported in that role. Workshops and seminars for parents were sponsored and local family planning agencies continued to counsel teenage patients concerning the importance of discussing family planning needs with their parents.

From the Division of Health Services, P.O. Box 2091, Raleigh, NC 27602-2091.
Illustrations by Ernest Craige, M.D.

Although the Crippled Children's Program served almost 30,000 children in clinics, hospitals and physician offices last year, reimbursement for inpatient hospitalization was available for only 10 months. We have adopted a reduced payment formula for lengthy stays at our large medical centers to reduce the strain on our resources.



Our Regional Developmental Evaluation Centers provided multidisciplinary evaluation and treatment services for more than 26,000 multi-handicapped children last year. However, this was a drop of 5,000 children from the prior year and again reflects the effects of federal and state budget reductions.

To combat the human suffering and the high cost of services to handicapped children, an increasing amount of energy is being expended on the prevention of disabilities through genetic health care services. Over 2,000 families received medical genetics services in the four centers located at East Carolina University, University of North Carolina at Chapel Hill, Bowman Gray and Charlotte Memorial Hospital. Metabolic screening identified two cases of PKU and 12 cases of hypothyroidism last year. Maternal serum screening for alpha-fetal protein was available on a demonstration basis at Bowman Gray and Chapel Hill. Over 7,000 pregnant women were screened and eight neural tube defects were detected along with a number of other anomalies.

The economy has been a disturbing factor in the Division's reimbursement of indigent cancer patients. The program has experienced a greater than 30% increase in applications for financial assistance. Coupled with the increasing cost of care and fixed appropriations, the program has had to reduce individual patient coverage by 30%. The maximum coverage is currently restricted to two inpatient days for diagnostic service and 10 inpatient days for definitive treatment.

Our Human Tissue Donation Program has had remarkable success through cooperative efforts with the N.C. Division of Motor Vehicles. Over 6,500 drivers sign Uniform Donor Cards each month and have their driver's license identify them as donors. However, we seem to be having more success overcoming the reluctance of the public than getting community hospitals committed to the concept of tissue retrieval.

There may be no better expression of what the private sector of medicine can accomplish under the broad banner of "public health" than North Carolina's medical examiner system. My remarks are largely intended to express appreciation generally to this Medical Society and specifically to those North Carolina physicians who have served as medical examiners or as regional pathologists. In telling you, or reminding you, of the accomplishments and generosity of the county medical examiners and pathologists, my report may sound like bragging. In my defense, I cite the words of that late great American philosopher, "Dizzy" Dean, who said, "It ain't bragging if you can do it."

You've done it. And you're doing it. You have responded to North Carolina's need for competent, unbiased, scientific death investigation with modern American medical know-how. Our system is your system and could not exist without you. We cannot have adequate standards of public health and safety without the knowledge good death investigation can provide.

Many of us regard death as the enemy, a reminder of our shortcomings as physicians. This reaction, not to mention the immediate needs of a never-ending parade of patients, hinders some of us from constructive concern with mechanisms of death, or the impact of a patient's death upon his or her family, or the interests of the community involving a given death. But approximately 600 of you are taking the time and effort to serve as the medical investigators, the medical referees, for the 8,000 to 10,000 unnatural, unusual, unattended or suspicious deaths that occur annually in this State. Widespread, systematic physician involvement in this area is still relatively new in North Carolina. Our medical examiner system did not spring forth full armored like Athena from the head of Zeus. Let us review briefly some of the landmarks in its evolution.

As far back as the 1890s, the editor of the *North Carolina Medical Journal* advocated replacing our then existing system of elected lay coroners with physicians to investigate unnatural and suspicious deaths, a new concept that was then proving successful in Massachusetts. History, however, notes no change except an increasing need until Dr. Wiley Forbus arrived on the scene in 1931. Dr. Forbus, first pathology chairman at the new medical school in Durham, brought from Maryland the concept of a statewide system to provide medical expertise in death investigation. His advocacy spread across the state to other physicians who also took up the cause, as did county medical societies. Law enforcement groups, the district attorneys, and the state bar association provided endorsements. This medical society sent to the legislature a resolution recommending establishment of a medical examiner system, and implied the participation of North Carolina physicians. The legislature responded with county option bills that died in committees in 1951 and 1953, but which passed in 1955 and 1965. Though less than ideal, their adoption by about 10 progressive counties yielded results that impressed neighboring counties. Those pioneering counties included Buncombe, Mecklenburg, Transylvania, Guilford, Forsyth, Caldwell, Vance, Lee, Durham, and Orange.

A dynamic, young attorney from New Hanover County, John Burney, became intrigued with Virginia's state-wide medical examiner system while defending a North Carolina doctor for murder. Upon being elected to the State Senate, Burney introduced legislation creating a North Carolina system and successfully fought its cause in the 1967 General Assembly. This bill was a modification of the Virginia law to fit North Carolina statutes. It was representative of the reform movement in other states which were taking part in this 20th century update of death investigation.

The statutes called for physician medical examiners in each county, for contracting with hospital laboratories for autopsy support, and for a central facility (the Office of the Chief Medical Examiners) with full-time, trained forensic practitioners and support staff to provide guidance, quality control and services such as toxicology and further autopsy support. The Office was to be administratively in the State Board of Health, the earlier name for what is now the Division of Health Services.

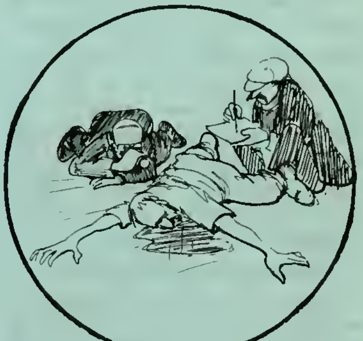
Chapel Hill was chosen as the operational headquarters for the system. The reasoning included mutual advantages to the State and to the University, as well as the symbolism of distancing the system from politics — in the poorer sense of that term. One of the long-term criticisms of the elected coroner concerned the political constraints put upon both the depth of investigation he could pursue and the decisions he might render.

In 1968 a search was undertaken for a Chief Medical Examiner for the State of North Carolina. In September of that year Dr. R. Page Hudson of Richmond, Virginia was selected. He began work in a converted closet in the medical school. Dr. Hudson was and still is the driving force in the successful implementation of the medical examiner system.

The beginning was marked by the oft-conflicting tasks of securing local participation through recruiting county medical examiners, and providing support services through autopsies, consultation, and court testimony. Communication sessions with groups of attorneys, law enforcement personnel, funeral directors, and others consumed much time then as they do now.

Incorporation of a given county into the system depended upon having medical examiners or acting medical examiners in that county. The statutes provided that the coroner could serve as acting medical examiner until such time as the services of physicians could be obtained. All of our 100 counties have been in the system since 1972. Only four now have "acting" medical examiners.

Let us look at documented examples of the N.C. medical examiner having a beneficial effect on his community. Consider a prominent man in his fifties found dead outside his front door. His face is bloodied and a hole is present in his upper arm. The neighbors gather and among them there is talk of a beating and a gunshot wound. Rumors start to fly. The medical examiner carefully cleans and examines the wounds. That on the face proves to be a superficial scrape, easily accounted for by the man's collapse to the ground. From the puncture wound, the examiner extracts a wooden twig which penetrated ¼ inch when the man fell. There are no injuries characteristic of assault. The widow claims her late husband had no significant medical history but, upon gentle questioning, the county medical examiner elicits from her that her husband had been complaining about "indigestion" for three days, a "cold" and shortness of breath the preceding day, and chest pain the morning of death. The medical examiner does not deem that an autopsy is indicated. He uses his knowledge of diseases and their presentations to explain to the widow and the others concerned that the symptoms and signs are characteristic of a myocardial infarction, that sudden death and collapse are typical complications, and that the injuries were superficial and caused by the collapse, not from assault. There is great relief, the rumors dissolve, and the role of the already well thought of physician is much appreciated.



In another instance, an automobile driver tells police, after he calls for help, that the pedestrian he ran over that night had been lying in the road. He contends he came over a rise in the road and had driven over the prone body before he could stop. Is this a true account of an unfortunate accident or the self-serving story of a careless driver? The county medical examiner finds on external examination a crushed chest, marks indicating tire tread imprints on the shirt, but the absence of the bumper mark injuries one sees on the lower legs when an erect pedestrian has been struck by an auto. No other injuries, such as from beating or shooting, are present. The examiner tells the highway patrolman of his opinion and no charges are filed. The dead man's blood alcohol concentration is 260 mg% which helps explain his presence in the road. According to the driver's attorney, the alcohol concentration and the examiner's workup stopped a civil suit before it was even filed.

Let us look at another scene. Authorities think the wounds on a man's head came from a gun fired from several feet away and, thus, mean murder. The medical examiner points out that the smaller, neater wound is actually a bullet exit wound, not the entrance wound as they had thought. He shows how the larger, ragged, stellate wound has sooty debris under it and represents an entrance wound where the end of the barrel was held tightly against the skin. This, plus the location of the wound, and the soot he finds on the web of the left hand which had steadied the barrel against the right temple, provide convincing evidence that the wound is self-inflicted. The scene and circumstances are compatible with this diagnosis and the suicide is recognized for what it is, rather than a death requiring a search for a murderer who doesn't exist.

In another case, during the physical examination in an apparently mundane unattended death at home, the examiner opens a closed eyelid and discovers what is further demonstrated at autopsy to be a gunshot entrance wound. The sheriff is informed and criminal investigation is successful.

On one occasion, medical examiners had just been appointed when a young woman became ill while driving to work with a friend. She had convulsions and quickly died. She was being treated for bronchitis and the coroner declined jurisdiction. The medical examiner was impressed with the history and the almost instant rigor, and authorized an autopsy. Subsequent toxicology revealed a high concentration of strychnine. Tetracycline in her capsules had been replaced with strychnine. Further investigation led to the prosecution of the husband.

One could go on and on about the county medical examiners, citing their solo triumphs and best cases. It is more difficult, but probably more important, to fully portray the value of their services in their cooperation, consultation, and communications directly, and through their reports, with families of the deceased, law enforcement officials, and others such as social services, OSHA, Consumer Product Safety, etc.

Another essential member of this health care delivery team is the pathologist. Scattered across the state in community hospitals and academic centers are superb pathologists who provide about 70% of the medico-legal autopsies performed in the State. It is contended by some that only board-certified forensic pathologists can handle the array of autopsies good health investigation requires. Our system has proved that this is not the case. The past 15 years have demonstrated that, with appropriate support and backup, hospital-based, general pathologists can handle most cases quite well.

Determination of cause of death is but a part of the pathologists' role. Their efforts in obtaining trace evidence such as fibers, stains or chips of paint that may link the victim to the place or instrument of death are invaluable. Distinguishing among the subtleties of contact gunshot wound and more distantly inflicted gunshot wounds is imperative in separating suicide from homicide and from accident. Age of a given injury, possible activity after injury, and the relative significance of two or more injuries or disease processes are also among the information provided by the pathologists.

Important as it is to have medical examiners and pathologists across the state, there is yet another vital element. There must be and, in North Carolina's system there is, a coordinating authority which provides for standards in death investigation, for consultation, for forensic instruction and continuing education, and for special services such as toxicology and identification facilities. Billing for the MEs and pathologists, for transportation, x-ray and other services is an unsung function of the Central Office. By the way, the dollar outlay to state and counties is one of the lowest in the nation at 35 cents per capita.

Nearly 20 forensic pathologists have trained at the Office of the Chief Medical Examiner, now recognized as one of the nation's better training centers. Proximity to the UNC School of Medicine and to the Duke Medical Center has made this possible. Members of the Medical Examiner staff have been invited to testify before Senate Committees, to serve with the National Safety Council, to contribute to editorial boards, take part in various advisory panels, and to advise other states on establishment or revision of their medical examiner system. They have presented papers at national and international scientific meetings. And this is as it should be. North Carolina is sufficiently advanced as a community that we should not have to be dependent on other states for new techniques, specifically trained people, research, and ideas. We have a role among the states to share and to contribute to others.

I cannot say there are no problems.

One of these is that the tendency to cling to the old ways has preserved the office of coroner in some of our counties. That office impedes the development of the individual county medical examiners where both offices exist, and thwarts the progressive change where there are yet no medical examiners. Another problem, or at least an issue, is the role of medical examiners in the future. To what extent should they be involved in investigation of death, disease, and injury related to chronic occupational or environmental problems? To what extent in the evolution of health care and medical practice? These are important questions yet to be answered.

I hope you'll agree that the intent of this Medical Society of two decades ago is being fulfilled. I hope also that you share my admiration for North Carolina's physician medical examiners and cooperating pathologists and their impressive contribution to the public health.

Of course, the success of all of these activities, programs and services depends upon the harmonious and mutually rewarding collaboration which has been characteristic of the relationship between the private practitioners of North Carolina and our state and local public health agencies for now more than 100 years, a partnership which invites respect if not envy in our sister states. For this, as well as your continued strong support of myself and my staff, I am very grateful.

The North Carolina Medical Journal *will publish material from other professionals who are important components of the medical system. I am pleased to announce that our colleagues in Pharmacy have agreed to supply papers for the Journal on a regular basis. The following pharmacists will contribute to this project: Milton Skolaut, Director of Pharmacy, Duke University Medical Center; Jack Upton, Director of Pharmacy, Moses Cone Memorial Hospital; Allen Rosman, Assistant Director of Pharmacy for Education and Research, North Carolina Memorial Hospital; Ronald Small, Chief Pharmacist, North Carolina Baptist Hospital; John Stallings, Administrator of Pharmacy Services, Pitt County Memorial Hospital.*

Medicine and Pharmacy

Christine C. Rudd

Physicians and health care consumers of the future will find hospital and community pharmacists increasingly involved in all aspects of drug therapy. As a technologically advanced society, capable of producing specific, effective, and potentially toxic therapeutic agents, we often progress so rapidly that a void is created between initial marketing of drugs and their end use. Both prescribers and consumers of pharmaceutical products receive less information than they need.

In an effort to fill these voids, pharmacists today are being taught to dispense drug information along with the tablets and capsules physicians prescribe. Today's graduating pharmacist has been trained in basic pharmacology, clinical pharmacology, pharmacokinetics, drug toxicity, drug monitoring, and patient education. Extensive academic and practical exposure in these areas has produced pharmacists capable of assisting physicians and patients in the selection of rational, cost-effective therapeutic drug regimens. The purpose of this article is to introduce the reader to a few of the services pharmacists can provide to patients and physicians.

The controversy over generic versus brand-name drugs had its roots in the 1970s and it continues today. As patents expire, competition among manufacturers increases, and the number of generic alternatives will also increase. Trained pharmacists, who understand the relative bioavailability of such products and are familiar with information gained from comparative studies, are well qualified to distinguish between the clinically important and clinically insignificant differences in drug products. For example, if a patient stabilized on one manufacturer's formulation of digoxin tablets changes to another formulation, he may develop subtherapeutic or toxic digoxin serum levels resulting from differences in the bioavailability of the two products. Conversely, many formulations do not differ significantly in bioavailability, and such similarity may allow the pharmacist to provide the patient with an equivalent product at a lower cost. The pharmacist can also suggest alternative non-prescription drug products, the price of which does not reflect the cost of heavy media advertising.

The pharmacist's expertise in the area of non-prescription drugs does not stop with selection of an efficacious product. The potential additive or antagonistic actions of one non-

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From the Duke University Medical Center Pharmacy, Durham, NC 27710.

prescription drug on other drugs the patient may be taking must also be considered. An arthritic patient maintained with aspirin for control of his disease may cause his salicylate plasma levels to drop below the therapeutic range by consuming large quantities of non-prescription antacids to treat the gastrointestinal upset he gets from the aspirin. The solution to that patient's problem must be a collaborative one by the physician, patient, and pharmacist.

Awareness of drug-drug interactions of potential clinical importance is growing rapidly; a number of pharmaceutical publications highlight recent developments in this area. Recently, it has been demonstrated that administration of cimetidine simultaneously with any of a number of compounds that are metabolized by the liver (i.e., theophylline, propranolol) may result in decreased metabolism, increased plasma levels, and the potential for drug toxicity. Pharmacists have several ways of screening such interactions. By obtaining a recent medication history from the patient, the pharmacist can determine if the metabolism of any of the drugs that the patient is taking might be affected by the addition of cimetidine to his regimen. If a potential for a drug-drug interaction exists, the pharmacist can remind the patient of the side effects associated with the agent he has been taking and instruct him to contact his physician if any of them develop. Many pharmacists maintain drug profiles for their regular patients. This allows the pharmacist to easily determine if a newly prescribed agent could potentially interact with or is a therapeutic duplicate of other drugs the patient is currently taking. In hospitals and community pharmacies where prescriptions are handled by computer, pharmacists have devised programs that screen patient orders and identify patients for whom the potential of significant drug-drug interaction exists.

Another evolving area of pharmacy practice is preparing parenteral (intravenous) solutions and monitoring their use by outpatients. Presently, this practice is divided into two areas; home parenteral nutrition and home antibiotic therapy.

Home total parenteral nutrition (TPN) is a recent development for treating stable patients whose metabolic abnormalities and/or disease states require that calories and protein be given by the intravenous route. Pharmacists participate in such outpatient therapy on one of several levels. Pharmacists can prepare patient-specific intravenous feeding solutions. With his skills in the area of sterile compounding, the pharmacist can use commercially available and extemporaneously prepared products to easily alter solution formulations when the physician detects change in patient protein, calorie, electrolyte, or vitamin requirements. The pharmacist can help educate patients in the appropriate use of infusion solutions and devices. The pharmacist also is well positioned to monitor for patient compliance and for complications of therapy. Thus pharmacists can help contain the cost of TPN therapy while increasing the patient's quality of life through active involvement in home parenteral nutrition programs.

The benefits of home parenteral therapy may also be realized in patients who require extended or chronic treatment of infectious diseases. Patients with osteomyelitis or endocarditis who used to be hospitalized solely for the administration of parenteral antibiotics have recently been successfully treated at home. Pharmacists participate in these programs by preparing sterile antibiotic solutions, educating patients concerning their appropriate use, and monitoring patients. Such monitoring may involve surveillance for patient compliance and for complications. In addition the pharmacist may assist the physician in interpreting patient antibiotic blood levels and may suggest dosage adjustments.

One pharmacy service which originated in hospitals and is now spreading to various communities is the interpretation of drug plasma levels and formulation of dosing regimens for individual patients. The need for such services was described in the 1970s and the provision of these services by pharmacists is rapidly increasing. Indeed, a good percentage of the published scientific studies relating to the pharmacokinetics and pharmacodynamics of drugs have been written by pharmacists. It is now well recognized that many disease states, age, and other variables may influence the blood level realized from a given drug dose. For drugs with a low therapeutic index (toxic level/therapeutic level), correct interpretation of blood level data and modification of dose or frequency may be necessary to assure adequate levels of the drug while avoiding toxicity. By virtue of their training and experience in the area, many pharmacists can provide reliable, relevant suggestions for physicians experiencing difficulty in achieving or maintaining the patient's drug blood levels in the therapeutic range.

Pharmacists are an excellent resource for both physician and patient for general information on the relative benefits, adverse effects, and costs of compounds within a therapeutic category. When new drugs are marketed at a cost considerably higher than the cost of established therapy, an honest appraisal of the benefits of the added cost must be made. A pharmacist can often provide a more complete profile of a new agent than is presented in promotional literature.

Hospital pharmacies have begun programs to carefully evaluate new and old products so that cost-effective and rational drug therapy is promoted. Through Pharmacy and Therapeutics Committees, drugs are carefully reviewed and either approved for general or restricted use or made unavailable at the institution. Pharmacists usually serve as the primary objective source of drug information for these multidisciplinary committees. The results of these deliberations are shared with the medical, nursing, and pharmacy staffs on a routine basis. Some pharmacy departments routinely prepare reviews of old and new agents and their appropriate use for circulation to the entire hospital staff. Thus the pharmacist may assist the physician by condensing information from a rapidly growing therapeutic class into a summary of the facts most applicable to his or her personal practice.

Several hospital pharmacies across North Carolina employ a pharmacist solely for the purpose of providing drug information to the pharmacy, medical, and nursing staffs of the hospital and nearby practitioners. These drug information pharmacists can provide a wealth of information on a variety of drugs and drug use questions very promptly.

Noncompliance with prescribed drug regimens occurs in 30 to 50% of patients receiving medication. The cause of such drug defaulting is multifocal and may range from lack of education concerning therapeutic regimens to financial restraints that preclude drug procurement. Additional studies have shown that intervention by the pharmacist, using oral and/or written counseling at the start of drug therapy, has resulted in a significant improvement in patient compliance. These studies also have demonstrated the importance of continued counseling and education of the patient beyond the initial encounter.

A number of studies have shown that patients remember no more than 20 to 40% of what the physician states concerning drug therapy. Often the patient is worried about his diagnosis and the implications of the disease; anxiety associated with the initial visit may preclude his "receiving" and understanding the details of prescribed therapy. Thus opportunities arise for the hospital and community pharmacist to teach and motivate the patient to adhere to and complete his therapeutic regimens by initiating or reinforcing instruction concerning prescribed drug therapy.

Pharmacists provide patient information and education in a number of ways. Many pharmacists counsel those patients referred by their physician, counsel patients with specific disease states (i.e., hypertension or diabetes), counsel patients receiving certain drugs within a therapeutic class (i.e., warfarin, theophylline), counsel patients based on age (i.e., elderly or pediatric) or, if manpower permits, counsel all patients receiving medications.

Many pharmacists have a number of teaching aids available to assist in patient education efforts. Illustrated informational materials in addition to patient counseling have proven to increase compliance significantly. These written materials assure that uniform information is presented to the patient regardless of who does the counseling. Many pharmacists have developed written materials for a number of the drugs they most commonly dispense to patients.

Some pharmacists use drug calendars, strip-pack, or Mediset® to improve compliance of their patients. These devices serve as a daily reminder to the patient that he has a therapeutic regimen to complete or maintain. These supplements are used to identify the drug and the time it is taken, and they provide a written or symbol schedule for the patient. The Mediset® system provides a seven-day supply of drugs to be taken at specified times. This device has been used in compliance studies with positive results.

Many pharmacies have educational displays or slide-tape presentations on certain classes of drugs that patients can use to better understand their therapeutic regimen. It is important to locate a professional pharmacist who can provide these patient education services.

Today's pharmacist, then, can contribute much to safe and effective drug therapy, and there are many professionally oriented pharmacists in the community who can provide the level of service I have described. With the generation of drug information proceeding at an exponential rate, both physicians and patients will benefit by putting their pharmacist's expertise to good use.

Whatever Happened to Starch Blockers?

Richard H. Drew, R.Ph.

Since obesity is a condition common to many Americans and is one that directly influences the overall health of the individual, we are constantly bombarded with a variety of new dietary and pharmacological treatments for this problem. One such intervention receiving wide publicity is the use of starch blockers. Formerly available in numerous pharmacies and health food stores, these products claimed in consumer advertisements to promote weight loss while allowing unrestricted intake of foods high in starch (such as pasta, bread, potatoes, etc.). Despite lack of human testing, over 200 products had flooded the market with brand names such as Sta-Trim®, Block-Cal® and Carbo-Lite®. However, on July 1, 1982, the Food and Drug Administration (FDA) ordered a recall of starch blockers, claiming that they were no longer being used as a food but rather as a drug, and therefore were subject to safety and efficacy tests as required by the Food, Drug and Cosmetic Act. This ruling is now being contested by legal proceedings.

Starch blockers contain various amounts of a protein derivative first isolated from wheat and kidney beans back in the mid-1940s. This substance is known to inhibit alpha-amylase, an enzyme found in saliva and pancreatic secretions which breaks down dietary starch into maltose, a sugar that is later converted into glucose and used as a source of energy.[1] When such an enzyme is blocked, undigested starch passes through the gastrointestinal tract similar to fiber, preventing the absorption of starch-derived calories. Manufacturers claimed that one tablet would prevent the utilization of 100 mg of starch.[2]

Although these agents gained rapid popularity, previous trials to document their efficacy were, at best, limited. Animal studies reported significantly less weight gain in rats fed starch blockers than in control animals when fed a standard diet, while others demonstrated decreases in blood sugar and carbohydrate absorption when people ate beans and wheat flour.[3-5] However, these trials suffered from poor study design and conclusions reached were widely criticized by researchers. Recent, well-designed studies involving normal human subjects administered starch blockers have failed to demonstrate inhibition of digestion and absorption of starch-derived calories.[2, 6] Several theories have been proposed to explain this conflict of information. Some authors propose that excessive amylase production occurs in humans, so the doses of starch blockers used in these trials were insufficient.[2, 7] Others speculate that such enzyme inhibitors will fail to work in the acidic environment within the gastrointestinal tract.[7] Since undigested starch material will then pass into the large intestine, it is possible that bacteria normally present will convert this material to fatty acids, which, too, can be absorbed as an energy source.[8]

Although the adverse effects from administration of starch blockers have not been well documented, complaints received by the FDA include flatulence (gas), nausea, vomiting, diarrhea, and stomach pain. Since undigested starch will retain water, its activity would be expected to be similar to that of a bulk-forming laxative. Potential problems exist in altering pancreatic enzyme secretion (essential to digestion) as well as malabsorption of trace elements, electrolytes and nutrients essential to body maintenance and growth. The long-term effects and adverse reactions to starch blockers are also unknown.

Based on information presently available, there is no evidence to support the use of starch blockers in the prevention or treatment of obesity. Further clinical trials are needed to assess both the safety and efficacy of these compounds. Regardless of the findings of such intensive evaluations, starch blockers should not and cannot replace the selection of an appropriate diet, balancing caloric intake with essential nutritional requirements.

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Prader-Willi Syndrome: The Disabled Child

Richard J. Wett, M.D.

Through 12 long years, my wife and I struggled with the perplexity of our youngest daughter's disorder. Consultation after consultation and examinations by pediatricians, psychiatrists, neurologists, and family physicians yielded little more than a collage of symptoms, or a more truthful "We really don't know what the problem is." Even a university hospital had little to offer in the way of a diagnosis. We could find no concrete explanation for her insatiable appetite, her poor muscular development, her sudden outbursts of temper or stubbornness, and her moderately retarded intelligence. The only, very unsatisfactory, answer we found was that our daughter was disabled, possibly with cerebral palsy: in short, a mentally retarded child. But our family could see that this was only an incomplete response to her complex problem.

One memorable day, I recall being intrigued by an article in the "Medicine" column of a weekly magazine about an "eating disorder." I had read no more than the first few paragraphs when I suddenly found myself reading about my daughter, her slow development, her difficulties, even her appetite. I could have written the article myself, I thought. And, from that article, we finally had a name for the disability that afflicted our daughter: Prader-Willi syndrome (PWS).

I remember the momentary relief when further research into the syndrome, along with correspondence with a few acknowledged PWS experts, finally confirmed our suspicion that our daughter was indeed a "PWS person." But soon came the disheartening realization that although we now had a diagnosis, it was little more than just a label; we had an explanation for our child's problems, but not an answer to them. And this explanation only left us with a new question; namely, what happens next?

We've found that the most difficult part of coping with any childhood disability such as PWS has been the realization that medicine, usually so full of solutions for various ailments, can do little to help the families of many developmentally disabled children. We were in a position common to many families with disabled children even now; we were not fortunate enough to have been involved with a multiple-discipline genetic clinic. For some time I was not aware of what a genetic clinic was, nor were they very common 15 years ago. And even though clinics today are more available, most families still must be directed to them and aided in finding a truly "sympathetic ear" in the medical profession.

My wife and I have learned that what parents and families of developmentally disabled children need the most is support, encouragement, and information. Unfortunately, through our contacts with other parents of children with PWS, we have heard of many cases when the physicians were either unwilling or unable to provide just these three basic needs. It seems that many physicians are not well enough instructed in how to aid parents and families of children with developmental disabilities, where to send them for help, who they should contact for mutual understanding, or how they can deal with the day-to-day problems of living with a disability or handicap. Recognizing this, we became actively involved with the Prader-Willi Syndrome Association, a national parent information and support group that a concerned parent outside the medical profession organized in 1974 to meet the unfulfilled needs of families affected by the syndrome. This method of sharing information and support, incidentally, has also been followed by parents of children affected by various other genetic and developmental disorders.

As a physician and a parent, however, I feel that our profession can do more to help families like mine. Possibly what is needed is more specific training for pediatricians and other professionals dealing with childhood disorders. Whatever the need, I feel that the family or clinical physician should make more of an effort to help and support parents seeking answers to their child's problems, rather than just prescribing treatment for the symptoms or making a diagnosis. Wouldn't the situation improve if we as physicians would stop and consider for a moment what having a child with a syndrome such as Prader-Willi does to a family and how we can help them with the difficulty of coping?

Prader-Willi syndrome itself was not prescribed as a syndrome until 1956, although it has probably been around for centuries. Nor is this syndrome as "rare" as many believe; the more we look for it, the less "rare" it becomes. This particular syndrome consists of hypotonia, insatiable appetite (which often leads to obesity if not controlled), hypogenitalism, CNS performance dysfunction, and abnormal growth patterns (delayed milestones).

My daughter now lives in a group home with 14 other persons with her

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From 5515 Malibu Drive, Edina, MN 55436.
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Edie Wett helped in the preparation of this article.

disability. My family is dedicated to helping the PWS Association prepare other families with younger children for what lies ahead of them and to inform as many professionals as possible about PWS. We hope this information will in turn solve the dilemma for other parents of undiagnosed children, and we ask each person we meet to lend a hand in supporting, encouraging, and understanding the family with a disabled child.

Shingles

Peter W. Heald, M.D., Claude S. Burton, M.D., and J. Lamar Callaway, M.D.

While "Shingles" or herpes zoster has been recognized for several centuries, physicians and patients have never been more interested in this eruption. This is due to the development of new anti-viral agents on the one hand and popular misconceptions concerning the use of the word "herpes" on the other. In addition, there has been a steady increase in cases because of our aging population and as a side effect of immunosuppressant therapies for cancer and other illnesses. With this steady increase in incidence, it behooves all of us to be informed about this illness.

Explaining the cause and course of herpes zoster involves a discussion of immunology and virology. It is important to know that though herpes zoster is a cousin of the genital herpes virus, zoster is not a venereal disease and is not likely to recur. Zoster represents a reactiviation of latent chicken pox virus though many patients will not recall their previous episode of chicken pox or varicella. After mounting a successful immune response to chicken pox, the virus enters a latent phase in the nerve cells alongside the spinal cord. The zoster form of this infection occurs when the virus is activated and replicates along the sensory branch of the nerve root in which it was residing. Frequently pain will appear in the involved area before the rash and this has on occasion resulted in unnecessary surgery for appendicitis and the like. Why and when zoster appears is not clear. Aging and immunosuppressant therapy both increase the risk of zoster, implying that there is an immunological check on the virus. Following reactivation the virus migrates along the sensory nerves to the skin. There the host mounts an immune response against the virus, controlling the eruption with an inflammatory reaction in the skin. In most patients the disease runs a benign, self-limited course. The rash will generally appear with small blisters on a red base within the area supplied by the sensory nerves connected to the involved nerve cells — often on the trunk or forehead.

The clinical setting of herpes zoster influences the choice of therapy. The key to successfully using the therapies discussed below is recognizing the complications of zoster. Disseminated zoster, encephalitis and motor palsies, ocular zoster, secondary infection, and post-herpetic neuralgia are the major risks to be considered. Disseminated zoster is arbitrarily defined as more than ten to twenty lesions outside the initial area of involvement. A careful exam is required to discover these scattered lesions. Another point of the examination focuses on motor function in the muscle groups of the affected areas. Facial palsies, arm weakness, and motor involvement of the lower extremities may present with the eruption or follow within two weeks. Corneal involvement accompanies herpes zoster of the forehead and warrants ophthalmologic consultation even with minimal symptoms. As the age of the patient increases over 50 so does the risk of post-herpetic neuralgia. This persistent and often crippling pain becomes a predictable complication over the age of 70.

Of the measures used to treat herpes zoster, the topical preparations often provide the most symptomatic relief. Cool compresses using one part vinegar to four parts water help alleviate the burning sensation and prevent secondary infection. Antibiotic ointments such as Erythromycin (Ilotycin) and Polymixin b/bacitracin (Polysporin) are used by many physicians but the authors recommend oral antibiotics for secondary infection. Young healthy patients who are not candidates for oral steroids may achieve some relief with topical steroids of low potency and cost. Of these, the hydrocortisone preparations such as Westcort and Synacort are the most practical.

Topical antiviral agents are of little

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benefit. Acyclovir (Zovirax) ointment is a preparation that decreases virus shedding from the zoster lesions but does not clinically abort the eruption. By the time the eruption has appeared in the skin little can be gained from halting viral replication. However, use of the Acyclovir ointment on the rash may prevent spread of the virus to people who have not had chicken pox. Fortunately zoster is not nearly as contagious as the chicken pox form of the infection. Zoster is spread by direct contact while chicken pox is spread by infected air.

Oral corticosteroid therapy has a definite role in the prevention of postherpetic neuralgia. At first glance, this may seem paradoxical since the drug has immunosuppressive effects. However, the generation of this painful sequela and of the motor palsies of zoster may be due to an overactive immune system. Since the neuralgia becomes frequent after the age of fifty all nonimmunosuppressed patients in this group should begin a course of prednisone at 1 mg/kg for five days followed by a decreasing taper over two weeks. This approach is also useful in controlling severe symptoms in nonimmunocompromised patients of all ages.

If the pain persists well after the eruption has cleared, management is difficult and often unsuccessful. Amitryptilene (Elavil) in doses up to 75 mg/day and Carbamazepine (Tegretol) up to 200 mg qid will help some patients. Local steroid injections, nerve blocks, acupuncture, and transcutaneous nerve stimulators have also been utilized. Narcotics are a last resort.

Immunocompromised patients both young and old are considered candidates for an intravenous antiviral agent. The goal of therapy here is not so much to avoid the dermatomal eruption but to prevent the sequelae of disseminated disease and visceral zoster. In the studies on these patients it does appear that healing times are slightly shorter and pain is slightly less of a problem. Currently, the two major antivirals, Acyclovir and Vidarabine, must be given intravenously. In turn this raises the ante of antiviral therapy by increasing the expense and the risk associated with bringing an immunocompromised patient into the hospital.

What does the future have in store for zoster therapy? The appearance of safe oral antiviral therapy in the marketplace is just around the corner and large clinical trials with these agents are in progress. This should eliminate the need for hospitalization and its expense for zoster patients. In time these agents, perhaps combined with steroids to reduce inflammation, may prove to be the standard therapy for this condition.

HOW WOULD IT FEEL TO BE A LAWYER WHO CAN NO LONGER STAND UP IN COURT?

That's how it feels to be Monroe M. Wallace, the man at the left: A young lawyer with a young family who spent the first 4 years of his career in the courtroom. And 8 years as general counsel for a major corporation... until multiple sclerosis affected a promising career.

How would it feel to you? You might feel dizzy. Numb. Exhausted. Shaky. Off balance. Have double vision.

Multiple sclerosis destroys the myelin covering that surrounds nerve fibers in the brain and spinal cord. Messages to and from the brain can get lost as they travel by these damaged areas. So your eyes, arms, legs don't do what you want them to do.

MS strikes about 200 young adults every week. It can be mild. Or it can be severe. Once you've got it, you've got it for life. Monroe Wallace still practices law, part-time. Others are less fortunate.

The National Multiple Sclerosis Society is helping people with MS live with MS. And funding research for a cure, all over the world. We *can* do it, but *only* with your help.

Please give generously. If you don't do your part, we can't do our part.

NATIONAL MULTIPLE SCLEROSIS SOCIETY
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LEARNING WITHOUT WORK

Multiple Problems Challenge the Internist

Charles W. Styron, M.D.

OVER luncheon a few weeks ago, Dr. Eugene Stead, Jr. discussed with me an interesting and challenging patient with multiple problems who had been under my care. Dr. Stead requested that a summary of the case be prepared for publication.

My colleagues — Philip Ashburn, gastroenterologist; William Dunlap, hematologist and oncologist; Tom Daniel, urologist; and Robert Harper, psychiatrist — had collaborated with me at Rex Hospital to obtain a favorable outcome in a woman presenting seven important problems. She had been referred by Drs. Herring and Jilcott of Kinston. The following problem list was made:

1. insulin-dependent diabetes mellitus uncontrolled on admission;
2. common variable immunodeficiency, adult onset, with anti-IgA antibodies. This diagnosis had been made by Dr. R. Buckley of the Duke Department of Pediatrics;
3. severe enteropathy due to sprue with malabsorption and malnutrition;
4. hyperchromic macrocytic anemia due to B_{12} deficiency and possibly malnutrition;
5. bladder spasm with associated pain, etiology undetermined;
6. dependent and depressive reaction associated with chronic disease;
7. Talwin dependency.

We discussed each of the problems:

1. The diabetes proved not to be a very difficult problem. Since a single dose of NPH insulin in the morning did not last through the night, she was placed on split dosage with 20 NPH before breakfast and 8 of NPH before supper. In general her diabetes was quite well controlled on a 2000 calorie, gluten-free diet except on the days that she added food which was not on her diet, usually in the afternoon. Because of some evening elevation of her blood sugar, at the time of discharge she was advised to take 20 of NPH before breakfast and 4 of regular and 8 of NPH before supper and, in fact, at difficult times to use a sliding scale with small doses of regular insulin to prevent decompensation of her diabetes. The glucometer was used frequently in the hospital, often four times a day, in order to keep up with her control status.

2. The immunologic defects explained her prior pulmonary infections and may have played a part in the gastrointestinal disturbances. While in the hospital she was given one transfusion of IgA deficient plasma to bring the levels of IgM and IgG toward normal. Blood containing IgA may cause a fatal anaphylactic reaction in this patient.

3. Dr. Ashburn did a fiberoptic study of her upper GI tract. Four biopsies of the duodenum and jejunum revealed chronic enteropathy, most likely sprue. There was no Giardia and no bacterial infection. On the 2000 calorie gluten-free diet, the patient ate well, after a few days did not vomit, had only one short bout of diarrhea, complained of no abdominal pain, became hungry, and gradually gained nine pounds while in the hospital. She was on Medrol before admission because regional enteritis had been suspected, but this was gradually reduced and omitted without recurrence of her symptoms.

4. Hyperchromic macrocytic anemia with markedly low red count, hemoglobin, and hematocrit reading. The white blood cell count was 3,000. She was B_{12} deficient with 100 μg B_{12}/ml. She was given 1000 μg B_{12} times three and developed a significant hematologic response. The maximum hemoglobin in the hospital was 8.9, hematocrit reading 27. White count returned to normal. The appearance of the blood smear improved from the hyperchromic macrocytic state. She was found not to be iron deficient. She was therefore advised to take 100 μg vitamin B_{12} by injection every two weeks and to have further followup of her blood status. We feel that some of her anemia may be due to malabsorption and malnutrition.

5. Bladder spasm. The cause for the complaint of pain over her bladder and on voiding was not found. The urine specimens were uniformly within normal limits. Dr. Thomas Daniel's endoscopic and x-ray examinations of the urninary tract revealed no pathology. Ditropan relieved her bladder spasm and generally made her more comfortable. Installation of Xylocaine cream in the vagina and in and around the urethra also helped her a great deal, so she was discharged on these medications with symptomatic improvement.

6. and 7. Dependent and depressive reaction associated with chronic disease and Talwin dependency. It was quite obvious that the patient had grown dependent on Talwin which we used also for a period of time in the hospital. The issue of drug dependency was discussed with her and Talwin was stopped. The patient agreed with the desirability of avoiding injectable drugs to control pain. Dr. Robert Harper went over her problems with her and decided she had a depressive reaction associated with a dependent state probably in keeping with her chronic diseases. He was quite helpful in her management and felt that she would be able to manage satisfactorily without injectable medications.

Certain basic lessons were apparent from study and treatment of this complex problem list — given in the above order.

1. Diabetes: Relatively few patients are satisfactorily controlled on a single injection of NPH insulin daily. Many

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From 615 St. Mary's Street, Raleigh, NC 27605.

patients require NPH or other intermediate insulin before breakfast and supper; also the addition of regular insulin with the NPH is often required.

2. The immunodeficiency made us skeptical that any lasting improvement could be accomplished with the other problems. By attacking each problem as an entity, however, we were able to sustain subsidence of symptoms and signs of the other problems.

3. The severe enteropathy was appropriately diagnosed as sprue following fiberoptic study and four biopsies. The gluten-free diet and diabetic control resulted in subsidence of the patient's distressing nausea, vomiting, diarrhea, and abdominal pain and in a substantial weight gain.

4. The B_{12} deficiency and subsequent marked reticulocyte response with B_{12} administration were solving the problem of anemia at the time of hospital discharge.

5. Bladder spasm and pain problem unresolved and etiology unexplained.

6. and 7. The patient's acceptance of dependency and determination to abandon this problem were remarkable reactions to a frank discussion with her of the problems. Her response to this distressing situation was remarkable and rewarding.

All of us learned in this case that surprising results sometimes reward aggressive efforts.

The Importance of the Dental Exam

R. Mack Harrell, M.D.

As a physician-in-training, I often rushed through the inspection of teeth and gums in an effort to save time for examination of more diagnostically ''vital'' structures such as the heart, lungs and abdominal organs. However, my recent experience in the diagnosis of disorders of calcium regulation and bone formation suggests that a careful dental examination can yield pertinent clinical information and enhance diagnostic accuracy. One case is particularly instructive.

A 27-year-old black man came to Duke University Medical Center with a long history of severely bowed legs, enlargement of the interphalangeal joints of the hands, and lower extremity pain and weakness with weight bearing. Other members (male and female) of the patient's family had similar complaints. There was no prior history of gastric surgery, renal disease, diphenylhydantoin use or milk avoidance. The patient denied symptoms of intestinal malabsorption. His tibias were severely bowed and there were multiple surgical scars about the knees from previous corrective osteotomies. The proximal interphalangeal joints of the hands were thick, but there was no tenderness to suggest true synovitis. The serum calcium concentration ranged between 5.4-6.5 mg/dl (normal 8.7-10.2) and the serum phosphorus, 4.5-5.6 mg/dl (normal 2.5-4.5). Renal glomerular function was normal but the renal tubular maximum for the reabsorption of phosphate was high at 6.65 mg/dl (normal 2.5-4.55). These data, in conjunction with undetectable levels of circulating immunoreactive parathyroid hormone (PTH) and a normal metabolic response to exogenously administered PTH, suggested the diagnosis of idiopathic hypoparathyroidism. A bone biopsy showed florid osteomalacia, a condition not usually associated with hypoparathyroidism. Subsequent study of other family members revealed several with normocalcemia, hypophosphatemia and osteomalacia (confirmed by bone biopsy). The syndrome was inherited in a pattern consistent with that seen in the genetically transmitted disease, X-linked hypophosphatemic rickets (XLH).

The disparate observations of idiopathic hypoparathyroidism in our patient and classic XLH in family members raised a difficult clinical question: Could one member of this XLH-affected family (our patient) have *both* idiopathic hypoparathyroidism (resulting in hypocalcemia and hyperphosphatemia, but *not* osteomalacia) and XLH (causing osteomalacia)? Since idiopathic hypoparathyroidism is likely to abolish the hypophosphatemia and renal phosphate wasting characteristic of XLH, the congenital coexistence of these two conditions appeared impossible. Was it possible that a patient with congenital XLH had acquired hypoparathyroidism postnatally? A literature search revealed a simple solution to this clinical conundrum.

We discovered that the body carries a permanent record of its infantile calcium and phosphate milieu in the enamel and dentine of the permanent teeth. Like rings on a tree trunk, lines of enamel hypoplasia on permanent teeth reflect periods of relative calcium ''famine.''[1] Moreover, phosphate deficiency leads to a pathognomonic abnormality of dentine structure which ultimately results in a rapid decay rate and premature tooth destruction.

Careful inspection of our patient's teeth revealed that they were carious and extraordinarily worn. One decayed tooth was extracted; histological examination of undercalcified sections showed the disordered dentine structure that is pathognomonic of neonatal and infantile hypophosphatemia (interglobular dentine — figure 1). We also noted the presence of several lines of enamel hypoplasia on other permanent teeth in a pattern that suggested the onset of systemic hypocalcemia at age 18 months.

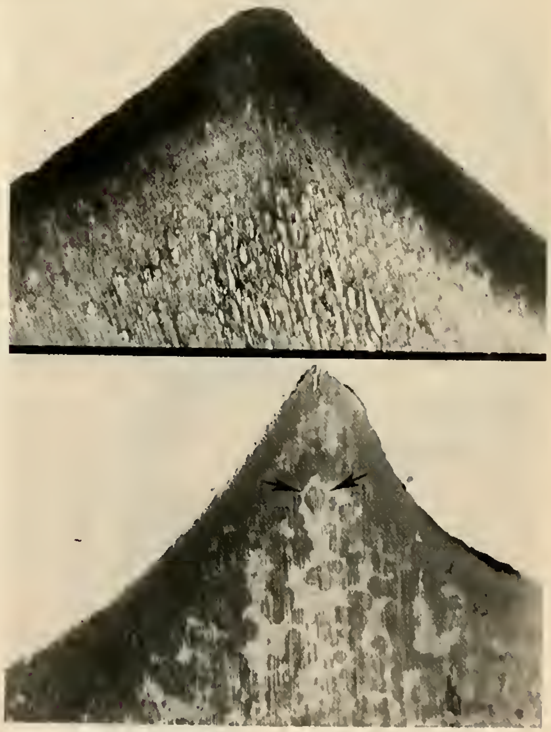

Figure 1. *Top: A ground section of a tooth from a normal control showing normal histological features of dentin. The homogeneous calcified structure of the dentin is evident. Bottom: A ground section of a tooth from my patient showing characteristic interglobular dentin (designated by arrow). The dentin is marked by round packets of calcified material which have failed to fuse into a homogeneous structure.*

From the Division of Endocrinology, Department of Medicine, Duke University Medical Center, Durham, NC 27710.

These data strongly support the hypothesis of two coexisting disease states. Our patient had been born with X-linked hypophosphatemic rickets leading to osteomalacia and dentine abnormalities; he had acquired idiopathic hypoparathyroidism at age 18 months resulting in characteristic tooth enamel hypoplasia. Without the phosphaturic effect of parathyroid hormone, he had been unable to manifest the hypophosphatemia and hyperphosphaturia that we observed in other XLH-affected family members. In summary, a careful dental examination allowed us to unravel an enlightening experiment of nature: a patient with X-linked hypophosphatemic rickets and acquired idiopathic hypoparathyroidism. This case makes the point that physicians, like horse traders, are well advised to look at the teeth of the animal in question before proceeding to snap diagnoses or judgments.

Reference

1. Nikiforuk G, Fraser D. Etiology of enamel hypoplasia and interglobular dentin: The roles of hypocalcemia and hypophosphatemia. Metab Bone Dis and Rel Res 1979;2:17-23.

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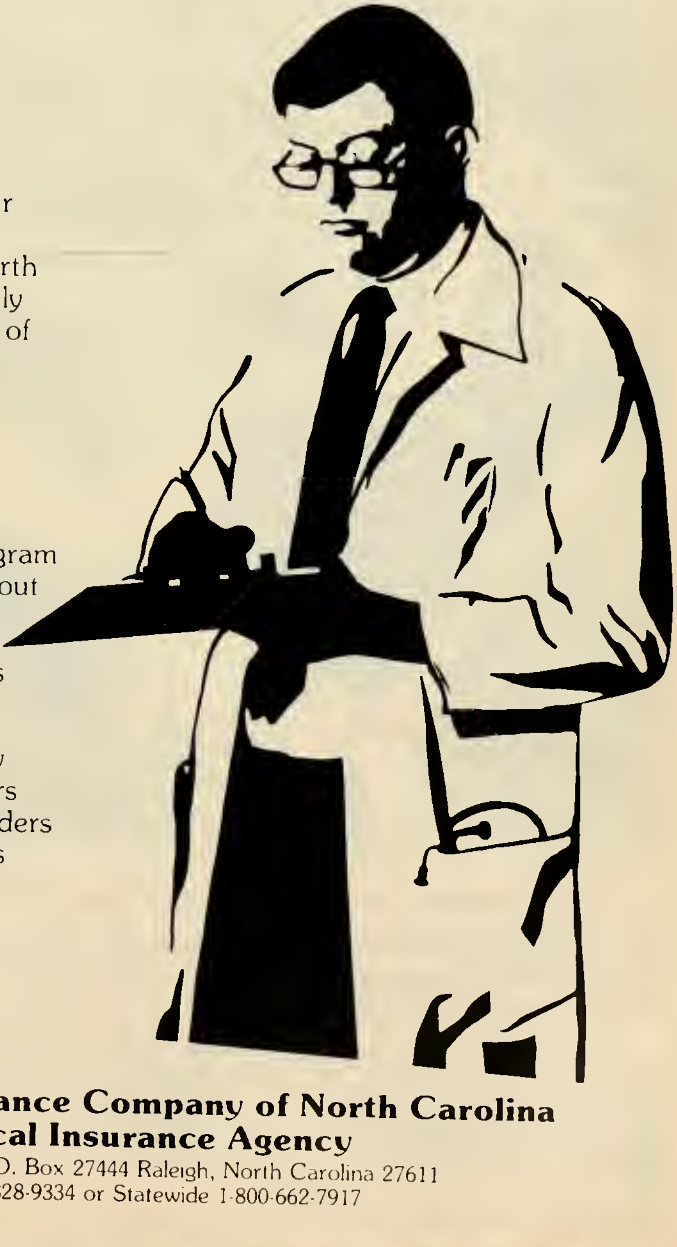

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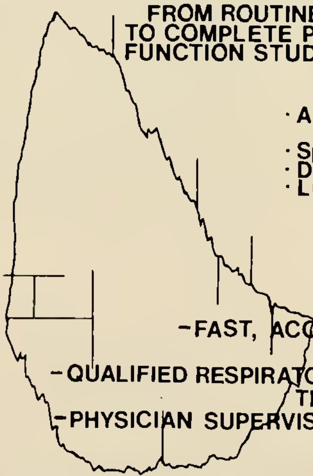

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More Books for Summer Reading

Matthew N. Hodgson

AGAIN this month, a potpourri of varied summer reading fare. As before, the emphasis will be upon variety and accessibility, with both paperbacks and clothbound editions considered.

By now, everyone who has scanned the racks of paperback whodunits at bookstores will have gained the distinct (and accurate) impression that a former English jockey turned author named Dick Francis has supplanted even Dame Agatha Christie as the most popular mystery writer of our day. What does Francis write about? Thoroughbred horse racing, breeding, and dealing. Offhand, I can think of no theme more unlikely to attract the already enormous — and still growing — reading public that Francis enjoys; but it happens that the author is a "natural." His plots are sound, his characters believable, and, what is more important, his fiction has that same quality of movement and vitality that permeates Sir Arthur Conan Doyle's still marvelous tales of the exploits of Sherlock Holmes. If you haven't read a Dick Francis thriller, do so. All are available in paperback, save his last one *(Banker)* and are published by Pocket Books at $2.95 the copy.

The novels of John Le Carre are also thrillers of a kind except that the author is a literary craftsman of the highest order. Few "serious" novelists writing in English today seem to me to be as good as Le Carre at his best, even though the latter has written almost exclusively about espionage and counter-intelligence, which were his former occupations.

The Little Drummer Girl is a perfect exemplification of Le Carre's particular talents. Ostensibly, it deals with the seemingly unending struggles between Israeli security forces and Arab terrorists; but, more than that, it is a series of character portrayals. The thread in *The Little Drummer Girl* is a liberated, second-rate young English actress named Charlie, who is going nowhere fast. She becomes the object of a series of subtle manipulations by both the Arabs and Israelis and when her usefulness ends, so does she — a pathetic young woman of vague good intentions and limited intelligence, drifting towards oblivion.

No person — and few causes — in Le Carre's novels are either completely just or unjust, good or evil. His writing style is lapidarian, oblique, and inferential. His novels must be read carefully and with rapt attention, but they are worth the effort.

Of particular interest to medical practitioners are two books, one just issued in a paperback reprint. This last is *The Murder of Napoleon* by Ben Wieder and David Hapgood (Berkeley, $3.50). After the Battle of Waterloo, Bonaparte, one-time Emperor of the French and conqueror of much of Europe, was exiled to the remote island of St. Helena, where he continued to hold a Court of sorts under the watchful eye of a British garrison. Within a few years, he developed severe stomach pains and eventually died of what was diagnosed as carcinoma. Nearly 150 years after the event, a Swedish dentist, Dr. Sten Forshufvud, became interested in Bonaparte's fatal illness and became engaged in one of the most fascinating detectival adventures of recent times. After much investigation, Dr. Forshufvud became convinced that Napoleon had died of arsenic poisoning and made some intelligent guesses about the identities of his executioners.

Messrs. Wieder and Hapgood have done a fine job in reconstructing and chronicling this fascinating story of the death of one of the world's most famous men.

What happens when ill-paid lawyers outnumber relatively affluent physicians by a ratio of eight or ten to one? For one thing, malpractice suits. Donald J. Flaster, who holds degrees in both medicine and law, has written perhaps the best, nontechnical study of the subject yet to find print. Designed primarily for laypersons, *Malpractice* (Scribners, $15.95) lucidly describes the legal rights and liabilities of all parties concerned in malpractice litigation. If I were a physician, a lawyer, or even an aggrieved patient, I would consider Dr. Flaster's book to be an indispensible primer to this important subject.

The credentials of William Lanier Hunt of Chapel Hill as an authority on southern horticulture are impeccable. One of the founders of the North Carolina Botanical Gardens and a member of the Royal Horticultural Society of England, Mr. Hunt's specialty is the flora of the South. His *Southern Gardens, Southern Gardening*, just published by the Duke University Press ($16.50), while not a how-to-do-it book, should be an invaluable addition to the libraries of all dedicated gardeners residing below the Mason-Dixon line. The author offers authoritative and practical advice on the cultivation and preservation of indigenous trees, shrubs, and flowers. The volume is well indexed and attractively produced. Highly recommended.

Finally, devotees of the television show, "60 Minutes," may recall an appreciative episode devoted to an English lady of uncertain years who has an uncanny knack of training not only dogs, but also their owners. One of those delightful eccentrics that the English race seems to produce endlessly, Barbara Woodhouse is not only the star of her own enormously popular television program in Great Britain, "Training Dogs the Woodhouse Way," but is the author of several books on the subject. Recently, I read with close attention *Encyclopedia of Dogs and Puppies* (Berkeley, $2.95). It is a fascinating compendium of what to do and when to do it when canines are involved. Just as expectant new mothers almost automatically acquire copies

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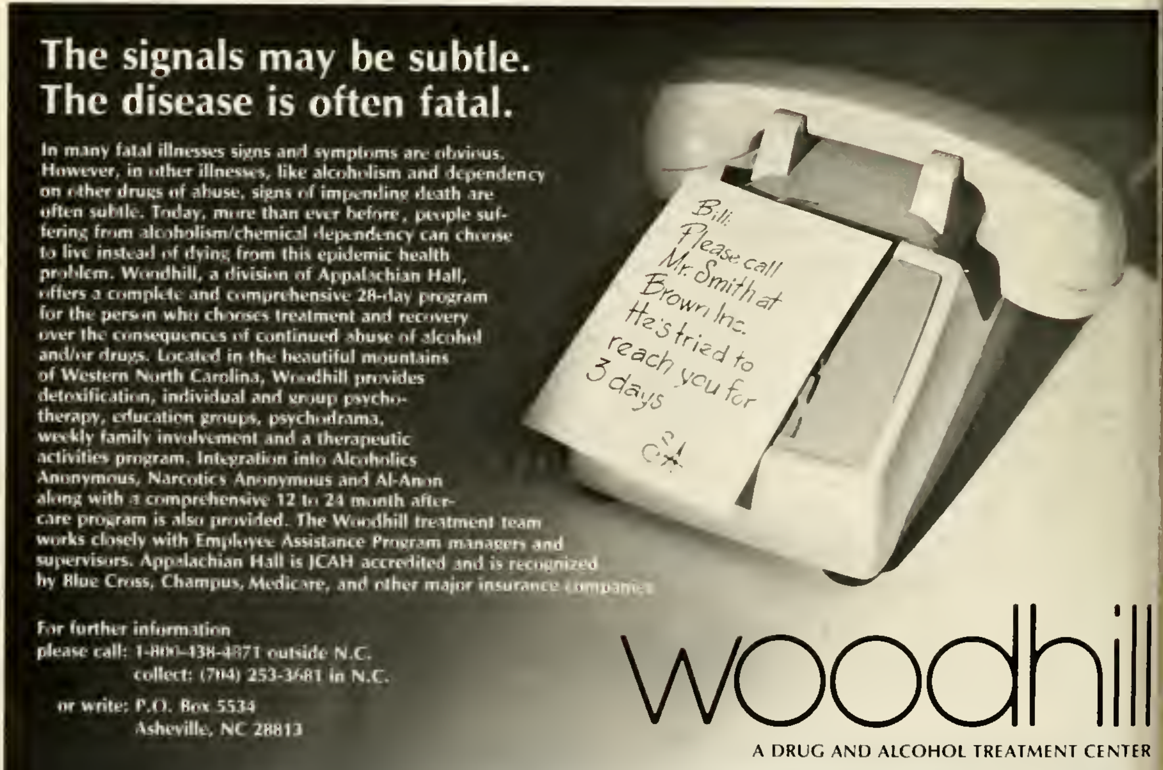
From the University of North Carolina Press, Brooks Hall, Chapel Hill, NC 27514.

of Dr. Spock's celebrated volume, no one contemplating the purchase of a puppy should be without Ms. Woodhouse's informative handbook. While this lady's advice is often comforting, it is also, at times, stern. It occurred to me that, with a few substitutions here and there, Ms. Woodhouse's book would be equally useful in the raising and training of human offspring. No doubt about it, Ms. Woodhouse is a caring and gifted lady — but somewhere in her ancestry must have been a regimental sergeant-major!



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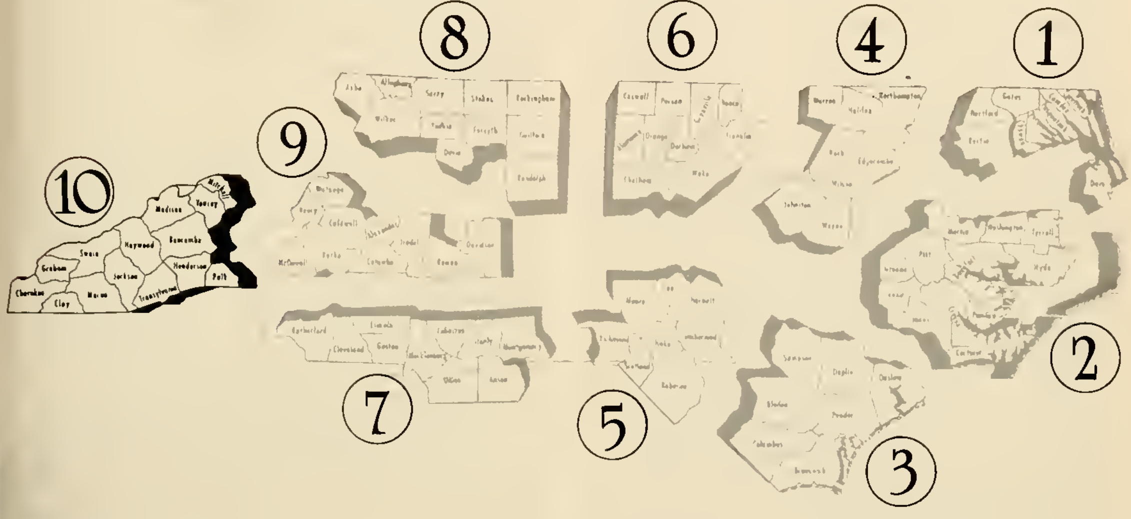
Changing Health Care Scenes

Charles T. McCullough, Jr., M.D.



[Ed. note: In February, 1983, the following paper was given by Dr. McCullough at a dinner-seminar sponsored by the 10th District.]

Welcome to the Tenth District Medical Society meeting and seminar. For those of you who are not physicians, let me tell you who we are. The North Carolina Medical Society is divided geographically into ten regions and our region, number ten, comprises the seventeen western and mostly mountainous counties of the state and our organization. In our district, we have approximately 475 practicing physician members.

I am Charlie McCullough, a private practicing orthopedic surgeon in Asheville and your re-elected councilor, now serving 4½ years in an office which usually, and possibly in the future, will be limited to one three-year term. Wallie Brown, a private family practitioner from Waynesville, is our vice-councilor. As councilor, I represent this region and serve with nine other councilors and eight elected officers who comprise the Executive Council of the North Carolina Medical Society. Our headquarters are in Raleigh.

One of the purposes of this investigative seminar is to provide a forum for physicians and other health care professionals to hear topics of mutual interest and consider their implications during these changing socioeconomic times. We also want to provide a meaningful regional professional meeting opportunity for the physician members of our district who provide care for the outlying hilltops and coves of our region. Also, someone recently developed the great idea that councilors should be responsible for membership of their district, and consequently this is my endeavor: to stimulate our annual membership drive.

Lastly, we hope to provide an easily accessible continuing medical education opportunity for the membership. After all, it was this county society that proposed to our state organization in 1974 and successfully enacted the 50 hour per year continued medical education requirement for eligibility and continued membership in this Society. A sometimes irritating but ultimately significant contribution to the maintenance of professional proficiency.

Many of you know our Western North Carolina mountains are among the oldest of all earth's mountain ranges. Never having suffered the devastations of major earthquakes or glacier coverings, our wildlife area has retained some species of perennials that are among the oldest on earth. There is increasing historical evidence that our mountain villages, particularly Asheville, developed in the early 1800s from colonial Carolinians seeking the presumed healthier environment offered by our mineral springs, clean air, sun, and mountain altitude. By the late 1800s and through the time of Thomas Wolfe, we were recognized as a leading tuberculosis treatment center. By 1889, the Buncombe County Medical Society was formed. Medical care and health care services could be depicted

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From the Bone and Joint Clinic, Doctors Drive, Asheville, NC 28801.

primarily as the family doctor making house calls and sitting for long hours at the patient's bedside. As medicine developed technologically and the unlimited areas of expertise began to emerge, this image became supplanted by the institution with its specialists and their highly sophisticated tools. On the national scene, our country, which had survived two world wars and a major depression, began a technological revolution whose future seemed to have no limit.

Paul Starr, in the *National Academy of Arts and Science Magazine*, has written about the late 1950s and early 1960s: "The premise of social policy as well as popular understanding was that America needed, and would benefit from, more medical care, more hospitals, more physicians and other personnel, and more elaborate medical technology. Most federal programs were devoted to augmenting the country's medical resources. More recently, the prevailing assumptions have reversed — as those who shape policy seek ways to reduce the number of hospitals, slow down the introduction of medical technology, and put off a potential glut of technicians. It seems to many," he relates, "the nation went from too little medical care, to too much, from stubborn shortages, to unrepressable excesses, without ever having passed through happy sufficiency."

Some pertinent factors apply to that time. Major, worthy entitlement programs were developed to provide medical care to the elderly and indigent at taxpayer expense. The Hill-Burton Act provided funds for hospital construction. Physician supply was stimulated through research grants to medical schools with the stipulation that the graduating classes be drastically increased.

While the commitment to these programs developed, challenges faced the nation: debts from the Korean conflict and subsequently Vietnam, to mention a few, added progressive justification for greater and greater taxes and subsequently deficit spending at the national level. Simply stated, the need for money outgrew the nation's ability to cover all its obligations, with the result that deficit spending helped to ultimately finance an expensive health care system.

The consumer, our patient, learned to take for granted and expect as entitlement the most complete, modern, up-to-date and readily available medical capability, whose hidden expense had little personal meaning. There are lots of other reasons for how that expense developed: rapid general inflation; yearly increasing utilization of services; more and more efficient technologies; and the introduction of hospitals and medical centers to even rural areas.

Given the fact that an expensive health care system evolved ($287 billion in 1982) or that it now comprises 9.8 to 10% of the gross national product is not what concerns those who are involved with cost. It is the projected escalation of that percent of the gross national product and its effects on other needed programs that demands that cost containment programs be considered by all individuals and organizations involved at all levels of the health service field. In 1965, total health care price was $39 billion and represented 5.9% of the gross national product. At the present rate of utilization and its projected increase, an overwhelming figure of $798 billion for the cost of the health care system has been projected for 1990. Voluntary cost containment programs at the public and national level began around 1977 and it has taken five or six years for the market to begin feeling the effects of those programs. The insurance industry, business, management, the hospital associations, the federal government and, yes, the American Medical Association have enacted meaningful measures for voluntary cost containment.

From the feds came the Health System Agencies designed to prevent duplication of hospitals and technology in a particular region. PSROs for patient review became commonplace. Industry began investigating new delivery modes. The national commission on the cost of health care, composed of 27 representatives from all facets of society and including several past presidents of the American Medical Association, published a three volume summary and report which contained forty-eight significant voluntary cost containment recommendations for health services. The operational effects of those recommendations, in my opinion, is significantly responsible for some of the changing health care trends we are noting in 1983. Some examples: the mere education of public on price consciousness, to know who ordered that test or procedure and why; the development of options to the fee-for-service care system, and experiments with delivery systems other than fee-for-service, including systems with a utility approach, individual practice associations, health maintenance organizations, health coalitions, health alliances, and preferred provider options, just to mention a few plans with various options and risks which should become thoroughly familiar to each of us; the promotion of consumer cost sharing to limit, if not restrict, full coverage insurance programs for those receiving medical care in order to further amplify the awareness of cost and who has been responsible for the cost; the limitation of the tax deduction for health service expenditures; the encouragement of more preventive medicine and the promotion of more outpatient coverage and services. These are but a few examples of the forty-eight recommendations by the national commission. From all indicators, the existing enactments of these proposals are creating results, and I feel are significantly responsible for some of the changing trends of today.

Another factor affecting trends, and worthy of our consideration, is supply. Like so many others, attorneys, dentists, college graduates; like the institutions that might have too many beds or cities that possibly have too many banks; regardless of whose statistics one wants to listen to or believe, a progressive surplus of physicians is probable. The Department of Health Services, particularly the Bureau of Health Professions, and The Graduate Medical Education National Advisory Commission (GMENAC for short) have reported to Congress a projected surplus of physicians by 1990. What are the figures?

At the close of 1981, there were 465,000 actively practicing physicians in the United States. An increase of 45% in the past 10 years, and a 100% increase of practicing physicians since 1960. Two hundred doctors per 100,000 population; by 2000, double that figure: 400 physicians per 100,000 population.

There are approximately 17,000 graduates from America's medical schools entering the market each year, in addition to immigrating physicians from foreign training backgrounds. I was surprised to learn that one of five actively practicing physicians in the United States today has been trained in a foreign training program. From all indicators, decreasing the number of graduating physicians now or decreasing the immigration of foreign trained physicians now will have little effect on the present system until the late years of this century. The production pipeline has been programmed, budgeted, and is operational and it requires a significant period of time to reorganize to decrease a possible oversupply.

With an increasing supply of professionals, some adjustments are anticipated. Health manpower economists have theories on the results of increasing the supply of professionals. One is called the "orthodox theory," which suggests that if there are more physicians around, health services will be better, competition will develop, a change in geographic distribution of services will ensue, and cost containment will result. Under such a theory, a glut of physicians never really develops; increasing the numbers increases the services over a greater area and competition keeps costs down.

I'm informed that another theory exists, the "supply-induced demand" or "target-income theory," which reflects the opinion that professionals and their organizations are so powerful in the marketplace as to be completely immune from the forces of competition. Those who believe in this theory worry that increased physician supply will not serve health planning manpower and national desires of dispersing the profession, that increasing the number of physicians will have little effect on changing practice patterns, and surpluses could develop that would also increase health care costs. I'm also informed that social policy proposals based on both theories are under consideration by the planners.

In a recent health manpower seminar held in this auditorium, Dr. Stambler of the Department of Health Manpower, commented upon the two theories and noted some likely changes which may evolve from a physician surplus:

increased competition for the health care dollar is likely;

some practice patterns will change;

diffusion of the profession, which has been occurring for the past ten years, will continue;

physicians' incomes have been declining for the past five years and will continue to show some decline;

with competition and surplus developing, less utilization of auxiliary personnel is anticipated.

Adjusting to these changing scenes may be rough. Our organizations and the individuals who represent us must approach policy debates on health care understanding the many perspectives involved. To be heard by the legislator, the insurer, the national industry, the health administrator, and the consumer, we must understand all sides of the pertinent issues.

I would hope and trust that our physician representatives insist on a certain degree of quality while maintaining a role of patient advocacy; these two commitments are given little attention by very many health planners. Whether the system that evolves will be more humane, only time will tell. Through seminars like this, continuing interest, and communication, we may all have meaningful input and assist in effecting policy that will determine the amount, content, cost, and quality of the future health care system of the new century.

Now for the good news: maybe, just maybe, we all might be better off. Maybe we physicians won't be working so hard; the 48 hours we now work per week on the average may decrease to the more typical average of the 36 to 40 hour work week. Increased time off and decreased stress may allow us to become better parents, better spouses, and better citizens.

Those mountains and old wildflowers I mentioned earlier — maybe we'll not only have time to read about them; we might just find ourselves able to go there and take a look.

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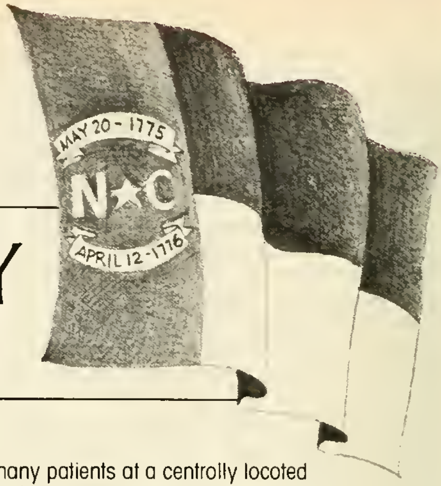


THE 18-HOUR-A-DAY DOCTOR

Dr. Gaine Cannon

A modern-day version of the country doctor on horseback, Dr. Gaine Cannon covered his scattered practice around the Blue Ridge Mountain country near Balsam Grove, North Carolina, in a four-wheel-drive Jeep wagon.[1]

On an average working day, Dr. Cannon rose at sunup to see patients at his converted-farmhouse clinic before setting out to make his usual 15 to 20 house calls around the countryside. Generally, after treating his primary patient, he saw each member of the family, as well—his personal effort at preventive medicine.

Multiple services

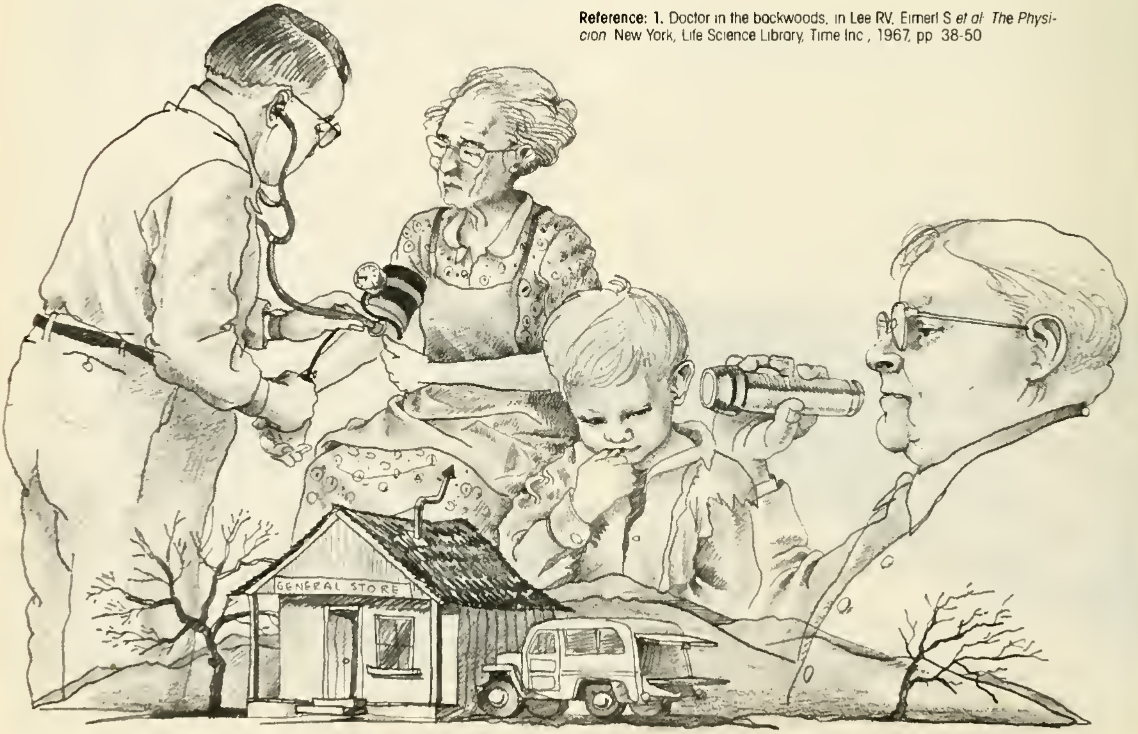
With the nearest hospital some 60 miles away and no pharmacy closer than an hour-and-a-half drive, Dr. Cannon filled his own prescriptions, delivered babies and treated many patients at a centrally located general store with the most modern techniques and medications. After a day on the road—usually within a 50-mile radius—Dr. Cannon's office hours would begin at 5:30 p.m. and stretch on until the last patient was attended to. His record-keeping sessions routinely filled the hour before midnight—rounding off Dr. Cannon's 18-hour day.

At all hours

But emergencies often interrupted his sleep. Dr. Cannon claimed his real office hours were 24 hours a day, and his patients revered him for it.

Dr. Cannon died in 1966 at the age of 68. He will be long remembered—most especially by the more than 5000 North Carolinians he helped bring into the world, some of them at the side of a rutted country road.

Reference: 1. Doctor in the backwoods, in Lee RV, Eimerl S *et al: The Physician* New York, Life Science Library, Time Inc, 1967, pp 38-50



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Patients should be cautioned about the combined effects with alcohol or other CNS depressants and about activities requiring complete mental alertness such as operating machinery or driving a car.

References: **1.** Rickels K: Drug treatment of anxiety, in *Psychopharmacology in the Practice of Medicine*, edited by Jarvik ME; New York, Appleton-Century-Crofts, 1977, p. 316 **2.** Feighner JP *et al*: *Psychopharmacology 61*: 217-229, Mar 1979 **3.** Data on file, Hoffmann-La Roche Inc., Nutley, NJ.

In moderate depression and anxiety

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Tablets 5-12.5 each containing 5 mg chlordiazepoxide and 12.5 mg amitriptyline (as the hydrochloride salt)
Tablets 10-25 each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt)

Please see summary of product information on following page.

LIMBITROL® TABLETS Ⓥ Tranquilizer—Antidepressant

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Relief of moderate to severe depression associated with moderate to severe anxiety

Contraindications: Known hypersensitivity to benzodiazepines or tricyclic antidepressants Do not use with monoamine oxidase (MAO) inhibitors or within 14 days following discontinuation of MAO inhibitors since hyperpyretic crises, severe convulsions and deaths have occurred with concomitant use, then initiate cautiously, gradually increasing dosage until optimal response is achieved Contraindicated during acute recovery phase following myocardial infarction

Warnings: Use with great care in patients with history of urinary retention or angle-closure glaucoma Severe constipation may occur in patients taking tricyclic antidepressants and anticholinergic-type drugs Closely supervise cardiovascular patients (Arrhythmias, sinus tachycardia and prolongation of conduction time reported with use of tricyclic antidepressants, especially high doses Myocardial infarction and stroke reported with use of this class of drugs) Caution patients about possible combined effects with alcohol and other CNS depressants and against hazardous occupations requiring complete mental alertness (e g , operating machinery, driving)

> *Usage in Pregnancy:* **Use of minor tranquilizers during the first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Since physical and psychological dependence to chlordiazepoxide have been reported rarely, use caution in administering Limbitrol to addiction-prone individuals or those who might increase dosage, withdrawal symptoms following discontinuation of either component alone have been reported (nausea, headache and malaise for amitriptyline, symptoms [including convulsions] similar to those of barbiturate withdrawal for chlordiazepoxide)

Precautions: Use with caution in patients with a history of seizures, in hyperthyroid patients or those on thyroid medication, and in patients with impaired renal or hepatic function Because of the possibility of suicide in depressed patients, do not permit easy access to large quantities in these patients Periodic liver function tests and blood counts are recommended during prolonged treatment Amitriptyline component may block action of guanethidine or similar antihypertensives Concomitant use with other psychotropic drugs has not been evaluated sedative effects may be additive Discontinue several days before surgery Limit concomitant administration of ECT to essential treatment See Warnings for precautions about pregnancy Limbitrol should not be taken during the nursing period Not recommended in children under 12 In the elderly and debilitated, limit to smallest effective dosage to preclude ataxia, oversedation, confusion or anticholinergic effects

Adverse Reactions: Most frequently reported are those associated with either component alone drowsiness, dry mouth, constipation, blurred vision, dizziness and bloating Less frequently occurring reactions include vivid dreams, impotence, tremor, confusion and nasal congestion Many depressive symptoms including anorexia, fatigue, weakness, restlessness and lethargy have been reported as side effects of both Limbitrol and amitriptyline Granulocytopenia, jaundice and hepatic dysfunction have been observed rarely

The following list includes adverse reactions not reported with Limbitrol but requiring consideration because they have been reported with one or both components or closely related drugs

Cardiovascular Hypotension, hypertension, tachycardia, palpitations myocardial infarction, arrhythmias, heart block, stroke

Psychiatric Euphoria, apprehension, poor concentration, delusions, hallucinations, hypomania and increased or decreased libido

Neurologic Incoordination, ataxia, numbness, tingling and paresthesias of the extremities, extrapyramidal symptoms, syncope, changes in EEG patterns

Anticholinergic Disturbance of accommodation, paralytic ileus, urinary retention, dilatation of urinary tract.

Allergic Skin rash, urticaria, photosensitization, edema of face and tongue, pruritus

Hematologic Bone marrow depression including agranulocytosis, eosinophilia, purpura, thrombocytopenia.

Gastrointestinal Nausea, epigastric distress, vomiting, anorexia, stomatitis, peculiar taste, diarrhea, black tongue

Endocrine Testicular swelling and gynecomastia in the male, breast enlargement, galactorrhea and minor menstrual irregularities in the female and elevation and lowering of blood sugar levels

Other Headache, weight gain or loss, increased perspiration, urinary frequency, mydriasis, jaundice, alopecia, parotid swelling.

Overdosage: Immediately hospitalize patient suspected of having taken an overdose Treatment is symptomatic and supportive. I V administration of 1 to 3 mg physostigmine salicylate has been reported to reverse the symptoms of amitriptyline poisoning See complete product information for manifestation and treatment

Dosage: Individualize according to symptom severity and patient response Reduce to smallest effective dosage when satisfactory response is obtained Larger portion of daily dose may be taken at bedtime Single *h s.* dose may suffice for some patients Lower dosages are recommended for the elderly

Limbitrol 10-25, initial dosage of three to four tablets daily in divided doses, increased up to six tablets or decreased to two tablets daily as required Limbitrol 5-12 5, initial dosage of three to four tablets daily in divided doses, for patients who do not tolerate higher doses

How Supplied: White, film-coated tablets, each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt) and blue, film-coated tablets, each containing 5 mg chlordiazepoxide and 12 5 mg amitriptyline (as the hydrochloride salt)—bottles of 100 and 500, Tel-E-Dose® packages of 100, Prescription Paks of 50

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THINGS MOST OF US DON'T KNOW

California and North Carolina Statutory Provisions Relating to the Insured's Choice of Provider and to Reimbursement Practices

Below are statutes from California and North Carolina. I selected California because it has taken the lead in the use of preferred provider organizations. The editor hopes that "a word to the wise is sufficient."

A variety of legislative changes are being considered, and in some cases implemented, in the states to attempt to control health care costs by restructuring the laws governing third party payment for health care services. Some of these proposals seek to create competition among providers for patients and third party reimbursement. Of particular interest is the type of legislation authorizing the third party payor to offer the insured a contract under which the payor may restrict the beneficiary's freedom to choose the sources of care (once the beneficiary has chosen this arrangement) or one which creates incentives for the beneficiary to choose designated providers (such as a reduced co-payment obligation). The concept of restricting benefits to, or providing incentives to choose, designated providers has come to be known as the preferred provider organization (PPO) option.

Regulation of insurance is a state activity, and all states exercise jurisdiction over insurers in some degree. Self-insured employer groups and union trusts (believed to provide benefits for as much as one-third of the population) are not subject to state insurance regulation. Whether the PPO concept can be incorporated into a third party health insurance package depends on a particular state's laws and regulations governing health insurance, along with any applicable court opinions and attorney general opinions.

California

Commercial Insurers:

"Nothing . . . shall . . . authorize an insurer . . . in any manner to direct, participate in or control the selection of the hospital or physician and surgeon from whom the insured secures services or exercise medical or dental professional judgment, except that an insurer may negotiate and enter into contracts for alternative rates of payment with institutional providers, and offer the benefit of such alternative rates to insureds who select such providers." (Ins. Code §10133(b))

"Alternatively, insurers may, by agreement with group policyholders, limit payments under a policy to services secured by insureds from institutional providers, and after July 1, 1983, from professional providers, charging alternative rates pursuant to contract with such insurer." (Ins. Code §10133(c))

"Pursuant to subdivision (c), when alternate rates of payment to providers are applicable to contracts with group policyholders, such contracts shall include programs for the continuous review of the quality of care, performance of medical personnel, utilization of services and facilities and costs, by professionally recognized unrelated third parties utilizing in the case of professional providers similarly licensed providers for each medical or dental service covered under the plan and utilizing in the case of institutional providers appropriate professional providers. . . . " (Ins. Code §10133(d))

"Insurers shall provide group policyholders with a current roster of institutional and professional providers under contract to provide services at alternative rates under their group policy and shall also make such lists available for public inspection during regular business hours at the insurer's or plan's principal office within the state." (Ins. Code §10133.1)

"The commissioner shall . . . promulgate regulations applicable to insurers and nonprofit hospital service plans which contract with providers for alternative rates pursuant to Sections 10133 and 11512 and limit payments under their policies and plans to services secured by insureds and subscribers from providers charging alternative rates pursuant to such contracts.

These regulations shall be designed to assure accessibility of provider services to individuals comprising the insured or contracted group. The regulations shall insure:

1. Adequacy of number and locations of institutional facilities and professional providers, and consultants in relationship to the size and location of the insured group and that the services offered are available at reasonable times.
2. Adequacy of number of professional providers, and license classifications of such providers, in relationship to the projected demands for services covered under the group policy or plan.
3. The policy or contract is not inconsistent with standards of good health care.
4. All contracts including contracts with providers, and other persons furnishing services, or facilities shall be fair and reasonable. . . . " (Ins. Code §10133.5)

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Hospital Service Contracts:

"Nothing . . . shall in any way or manner restrict or interfere with the right of any individual . . . to select the contracting hospital or to make a free choice of his attending physician. . . ."

A contract need not contain the foregoing provisions . . . when a plan has negotiated and entered into contracts for alternative rates of payment with institutional providers, and offers the benefits of such alternative rates to group contractors who select such providers. A contract need not contain the foregoing provisions when a plan, by agreement with group contractors limits payments under a contract to services secured by subscribers from institutional providers charging alternative rates pursuant to contract with such plan. On and after July 1, 1983, the provisions of this subdivision shall also be applicable with respect to both professional and institutional providers." This section als contains language substantially the same as in §10133(d) (Ins. Code §11512(h))

Section 11512.1 is substantially the same as §10133.1

North Carolina

Commercial Insurers:

"The policyholder . . . shall have the right to choose th provider of such services. . . . " (§58-260)

Hospital, Medical and Dental Service Corporations:

"Any corporation . . . may . . . issue subscribers' contracts . . . for the payment of either hospital or medica and/or dental fees, or the furnishing of such services . . and may enter into contracts with . . . (providers) for th furnishing of fees or services. . . . " (§57-1)

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CHANGING FACE OF MEDICAL PRACTICE

Otolaryngologists Evolve Into Head and Neck Specialists

William Hudson, M.D.

Your son is a what? I can still recall my mother struggling to pronounce "otolaryngologist." Despite the fact that otolaryngology is the second oldest recognized surgical specialty, the American Board of Otolaryngology having been founded in 1924, this specialty designation still defies mass recognition. This identity dilemma led to the acronym "ENT," used widely by both the lay and the profession. During the past twenty years the scope of modern otolaryngology has expanded enormously. Contributing factors include lengthening of the training program by requiring more pre-specialty exposure in general surgery and the continuing emphasis on regional specialization in medicine. The term "ENT" does not define modern otolaryngology and has a somewhat demeaning connotation to those skilled in the surgical and medical demands of the head and neck region.

The development of regional specialization has greatly improved the quality of care in surgery. No longer can one surgeon master the complexities of all areas. In fact a trend toward subregional or "super specialism" is increasing, for example hand surgeons and ear surgeons. Even within otolaryngology it would be difficult for one individual to master the recognized subdivisions of 1) otology, 2) rhinology, 3) laryngology, 4) allergy, 5) head and neck surgery, 6) facial plastic and reconstructive surgery, and 7) bronchoesophagology. Many young otolaryngologists have elected one or more of these subdivisions for primary emphasis in their practice. One hopes this trend toward super specialization will not result in right ear surgeons and left ear surgeons.

Recognizing this need for a change in identity, the American Academy of Otolaryngology recently added Head and Neck Surgery to its title. The Academy suggests referring to its physicians as head and neck specialists.

In the future when you refer to or see as a patient your friendly, local otolaryngologist, please refrain from calling him an "ENT" doctor. If you can't pronounce or remember "otolaryngology," call him what he truly is, a head and neck specialist.

From the Division of Otolaryngology, Department of Surgery, Duke University Medical Center, Durham, NC 27710.

Chymopapain Comes to North Carolina

Philip J. Bach, M.D.

The North Carolina Neurosurgical Society made its stand on chymopapain clear in the Feburary 1983 issue of North Carolina Medical Journal. *Dr. Philip J. Bach speaks below for the orthopaedic community.*

On November 10, 1982, The Food and Drug Administration allowed the administration of Chymopapain in this country. The papain enzyme was isolated in 1941. In 1956, Lewis Thomas, M.D., a pathologist at New York University Bellevue Medical Center showed that papain could break down cartilaginous protein polysaccharide when injected into the tall rigid ears of rabbits causing the ears to collapse. About seven years later, Lyman Smith developed chemonucleolysis, a technique in which chymopapain is injected into herniated lumbar intervertebral disc. Following Dr. Smith's report, there were many enthusiastic reports of the method in literature, but many of the optimistic reports have been critized by authors as being uncontrolled and not free of bias. The early results of the first double blind clinical trial reported no statistical difference in the effect of success between the placebo group and those injected with chymopapain, and this was published in the *Journal of Neurosurgery* in 1976. This report resulted in the withdrawal of chymopapain from use in the United States; however, it has been continued to be used in Canada. Finally in 1980, new studies of chymopapain chemonucleolysis were undertaken which showed that chymopapain is effective; for this reason, the drug has been released in this country.

Chymopapain injected intradiscally causes a breakdown of the chondromucoprotein and produces a temporary rise in the acid mucopolysaccharide in the urine. This breakdown is thought to shrink or dessicate the herniated nucleus

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From Charlotte Orthopaedic Clinic, P.A., 120 Providence Road, Charlotte, NC 28207.

relieving pressure on the nerve. The chymopapain causes a rapid reduction of viscosity of the water soluble portion of human disc tissue. In plasma chymopapain activity is inhibited by the natural proteolytic enzyme inhibitor alpha-2 microglobulin, so that the proteolysis by chymopapain is self limiting because of the ubiquitous occurrence of this plasma protein throughout the body.

Chymopapain is administered intradiscally by the use of long needles under x-ray control. The procedure is done either in the operating room or in the x-ray department under general or local anesthesia. It is done in the lateral decubitis position and a pad is placed on the lower side of the lumbar spine to create a scoliosis to make the approach to the interspace easier. Technically, the L-4 interspace is much easier to inject than the L-5 interspace, and some will routinely inject the L-4 interspace and use the needle that is in L-4 to guide the entrance into L-5.

As an orthopaedic surgeon I agree with the statements made by the North Carolina Neurosurgical Society about using chymopapain in treating intervertebral disc disease.[1] We at the Orthopaedic Hospital of Charlotte are putting out a protocol spelling out the indications for the procedure and are making mandatory the followup of patients for a minimum of six months.

The preoperative stay in the hospital will be about the same as for laminectomy but the postoperative stay of two or three days will be shorter. Approximately 50% of the patients may return home on the first postoperative day; the other 50% will have muscle spasms and may be in the hospital for three to five days postoperatively.

The cost of the drug to the pharmacist is around $550.00 and the retail cost will be in the range of $925.00. The necessary X-rays will cost between $250 and $300 per procedure. The fee to the surgeon is yet undetermined, but may be less than the fee for a laminectomy.

The X-ray equipment requires a portable C-arm. The current C-arm units at Charlotte Memorial Hospital and the Orthopaedic Hospital are not powerful enough to penetrate the lumbar spine in large patients, so both hospitals are going to have to purchase a new C-arm unit at a cost o $70,000 each.

The major concern with chymopapain is the possibility of anaphylaxis. This occurs in approximately 1% of the patients treated with chymopapain. The incidence in women is 2.5%, while in men it is approximately 0.18%. In the female population, there is also an indication that the presence of sedimentation rate above 20, or the fact that the treatment occurred during the patient's menstrual period makes these patients more susceptible to anaphylactic reaction. The Chymopapain Committee recommends that preoperatively the patient be given Cimetidine (Tagamet) 300mg po every 6 hours for 24 hours prior to injection along with Diphenhydramine (Benadryl) 50 mg po every 6 hours for 24 hours prior to injection. The anaphylactic reactions occur within the first three hours of the administration of chymopapain, and usually within the first 15 minutes.

The Chymopapain Course was given to 5,600 neurological and orthopaedic surgeons in Chicago in January of 1983. One-thousand eight-hundred surgeons in February 1983, and another 1,000 are expected to come to Chicago later this spring. This plus the fact that 50% of the adult population is incapacitated sometime with the complaint of low back pain, and that about 25% of the population complains of disturbing low back pain on a regular level, and that at least 1% of the adult population at some time will have a true herniated disc syndrome, suggests that very shortly the doctors in this country will be performing a lot of chemonucleolysis. It will be tempting to use this new tool for indications beyond what was taught in the course such as multiple level disc injections when only one disc is ruptured, or to do intradiscal therapy without adequate training. Therefore, it behooves the hospital staffs in our state to carefully delineate the privileges of who is to perform chymopapain, and to scrutinize the medical records to make sure the patients are being properly selected and cared for.

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[1] Editorial: Position paper on chemonucleolysis; the North Carolina Neurosurgical Society. N Carolina Med J 1983;44:102.

Bulletin Board

Continuing Medical Education

Please note: 1. The Continuing Medical Education Programs at Bowman Gray, Duke, East Carolina and UNC Schools of Medicine, Dorothea Dix, and Burroughs Wellcome Company are accredited by the American Medical Association. Therefore CME programs sponsored or cosponsored by these schools automatically qualify for AMA Category I credit toward the AMA's Physician Recognition Award, and for North Carolina Medical Society Category A credit. Where AAFP credit has been obtained, this also is indicated.

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Deadline: August 25, 1983
Info: Robert B. Taylor, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4450

September 12
"Records and Other Necessities"
Place: Raleigh
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

September 13
"Critical Care Medicine: Initial Triage and Management"
Place: Fayetteville
Credit: 5.5 hours AAFP
Info: Mrs. Mary Henley, Fayetteville Area Health Education Foundation, Inc., Box 64699, Fayetteville, NC 28306. 919/323-1152

September 15
"Records and Other Necessities"
Place: Lumberton
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

September 15-16
"Fifth Annual Health Law Forum: Antitrust Impact on Medical Staffs"
Place: Greenville
Info: Bonnie Partin. 919/872-2830; in NC call 800/662-7403

September 19-November 11
"Postgraduate Course in Sonic Medicine"
Place: Winston-Salem
Credit: 35 hours per week Category I AMA
Info: James F. Martin, M.D., Center for Medical Ultrasound, Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4505

September 21
"Surgical Infections"
Place: Durham
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

September 21
"Wellness in the 80's"
Place: Sanford
Fee: $15
Credit: 4.5 hours Category I AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

September 26
"Records and Other Necessities"
Place: Jacksonville
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

September 29-October 2
"Diseases of the Upper Urinary Tract"
Place: Pinehurst
Credit: 16 hours Category I
Info: Linda Mace, Box 3707, Duke University Medical Center, Durham, NC 27710. 919/684-2033

September 30-October 1
"Changing Concepts in Reproductive Endocrinology and Infertility"
Place: Chapel Hill
Info: W. B. Wood, M.D., 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2112

October 1-2
"Practical Dermatology for the Non-Dermatologist"
Place: Asheville
Info: W. B. Wood, M.D., 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2112

October 3
"Perinatal Medicine Symposium"
Place: Durham
Credit: 7 hours Category I
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

October 3-7
"Microsurgery Workshop"
Place: Durham
Info: Donald Serafin, M.D., Box 3372, Duke University Medical Center, Durham, NC 27710. 919/684-3347

October 5
"Initial Treatment in Hypertension — New Concepts"
Place: Durham
Info: J. C. Gunnells, M.D., Box 2991, Duke University Medical Center, Durham, NC 27710. 919/684-5038

October 7-8
Ocular Surface — Contact Lens Symposium"
Place: Atlantic Beach
Info: Carol Vilas, Box 3802, Duke University Medical Center, Durham, NC 27710

October 7-9
"Second UNC Symposium on Sarcoidosis"
Place: Chapel Hill
Info: W. B. Wood, M.D., 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2112

October 14-15
"Davison Club Weekend"
Place: Durham
Info: Janet Sanfilippo, Box 3407, Duke University Medical Center, Durham, NC 27710. 919/684-6347

October 17-19
"Malpractice Loss Prevention"
Place: Chapel Hill
Info: Judith Carter 919/966-4032

October 18
"Malpractice Awareness — Stat"
Place: Asheville
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

October 19
"Cerebrovascular Accidents, Acute Care and Rehabilitation"
Place: Sanford
Credit: 2 hours Category I AMA

Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

October 26

"Records and Other Necessities"
Place: Pinehurst
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

November 9

"Records and Other Necessities"
Place: High Point
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27661. 919/828-9334

November 15

"Records and Other Necessities"
Place: Wingate
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

November 10-12

"Medical Alumni Weekend"
Place: Durham
Info: Janet Sanfilippo, Box 3407, Duke University Medical Center, Durham, NC 27710. 919/684-6347

November 16

"Antibiotics and Infectious Disease"
Place: Sanford
Credit: 3.5 hours Category I
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

November 30-December 3

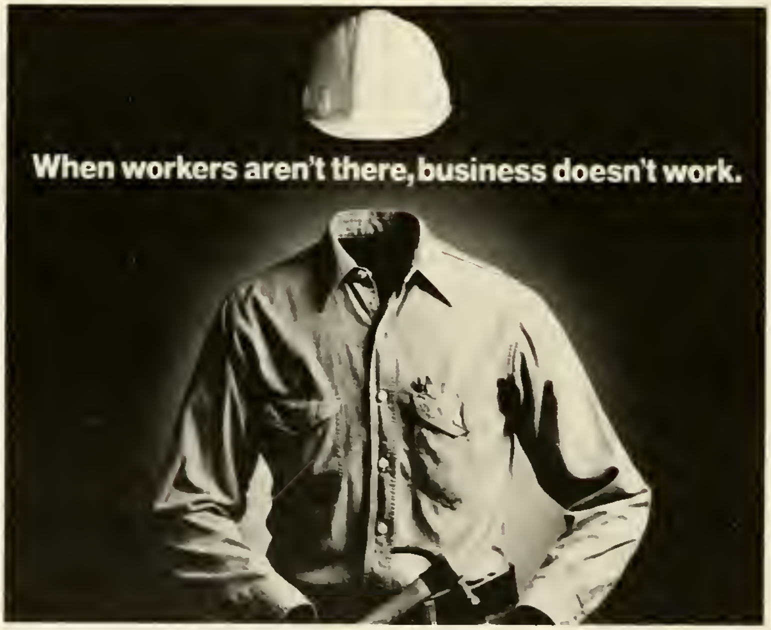
"35th Annual Scientific Assembly"
Place: Greensboro
Credit: 16 hours AAFP
Info: NC Academy of Family Physicians, Box 20146, Raleigh, NC 27619. 919/781-6467

December 6

"Duke Tuesday"
Place: Durham
Info: Linda Mace, Box 3707, Duke University Medical Center, Durham, NC 27710. 919/684-2033

December 21

"Obstetrical Analgesia"
Place: Sanford
Credit: 2 hours Category I
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394



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American Cancer Society

This space contributed as a public service

Letters to the Editor

AIDS

To the Editor:

In my several years of medical practice the most serious insult that I have seen to the dignity of the medical profession was the publication of the editorial "AIDS and the Moral Law" in the May 1983 issue of NCMJ. This piece is notable for its righteousness, its lack of good taste, and its lack of compassion. It represents the worst possible mixing of religious and medical concepts.

This profoundly homophobic article ignores all logic in its arguments by not considering the fact that AIDS involves individuals other than homosexual males, such as hemophiliacs and Haitians. Are we to assume that these individuals are also being punished for violating "natural moral law?" Applying the same logic to similar situations do we assume that sickle cell anemia is a punishment for the sins of a particular race, or is breast cancer God's way of dealing with the violation of moral law by women?

If one is going to expound this kind of religious and medical nonsense then the author's premise would seem to carry some far reaching implications. For example, should physicians interfere with "God's will" and attempt to treat patients who are judged to be punished for violating natural moral law. How do we decide among our patients those who "deserve" their illnesses and suffering versus those who do not?

I, for one, am unwilling to attempt to judge whether my patients deserve their suffering or not. There may, of course, be endless speculations of why individuals are beset by illness and suffering. One could just as readily speculate that in some divine plan innocent people suffer to test the love and compassion of all men and women. If this premise were true, it would appear that, in the case of AIDS patients, some people are going to have a great deal of difficulty passing the test.

James P. Krajeski, M.D.
2001 Union Street
San Francisco, CA 94123

The editor thanks those who wrote him about this editorial and congratulates them for their wisdom in reading the North Carolina Medical Journal. *We are now closing our letters column on Reverend Selby's editorial.*

Infanticide for Handicapped Infants?

To the Editor:

It is a tragedy when a pregnancy results in a baby that has a handicap, or is not as perfectly formed as the parents had hoped for, anticipated, or nowadays had planned. However, just because that infant is not exactly as anticipated does not make it inferior.

At the time of birth there exists a human being who by the aw is entitled to full protection of all of his rights. The most basic right enjoyed by every human being is the right to life tself. Right and respect for life means that we show that equally to everybody. We cannot possibly tolerate a double standard where we distinguish between the management of the "normal newborn" and a "not so normal newborn." As physicians, we should never ask ourselves the question: "Should we treat this infant?" but "How do we treat this infant?" Treatment of a handicapped newborn is complex, but not so complex that it includes the option to kill. We are not talking about conditions that are incompatible with life and are uncorrectable. The issue at stake is infants who would die if medical or surgical treatment were withheld.

Does infanticide occur? Yes. Drs. Duff and Campbell at Yale University publicly stated that of 299 consecutive deaths in the special care nursery at New Haven Hospital, 43, or 14%, were due to withholding or stopping of treatment. We all know the case of Baby Doe last year. A child with Down's syndrome and duodenal atresia. Surgery was refused. The court allowed this infant to die. There was no question at the time that this was a human being, but had this human being value? The child was retarded, but is retardation a crime deserving the death penalty? I am not aware of specific cases of infanticide in North Carolina. That is not to say that they could or might not occur now or at some time in the future.

President Reagan wrote in the latest issue of the *Human Life Review:* "As a nation, we must choose between the sanctity of life ethic and the quality of life ethic." I would like to quote his concluding statement: "Abraham Lincoln recognized that we could not survive as a free land when some men could decide that others were not fit to be free and should therefore be slaves. Likewise we cannot survive as a free nation when some men decide that others are not fit to live and should be abandoned to abortion or infanticide."

Henry R. Boer, M.D., M.P.H.
3036 Lake Forest Drive
Greensboro 27408

A Hyphen by Any Other Name

To the Managing Editor:

It has been called to my attention that a misplaced hyphen appeared between the words Bowman and Gray in a credit line on page 351, June issue of the *North Carolina Medical Journal.*

Inasmuch as our medical school was named for one man, Bowman Gray, the name should not be hyphenated. I would appreciate your assistance in our continuing battle against the hyphen (at least when it is used in our name).

Thank You.

Bill Glance, Director
Office of Information
and Publications
Bowman Gray School of Medicine

The Managing Editor replies:

Mea culpa, mea maxima culpa. You are quite right: I *overhyphenated. If you would be so good as to move Bowman no hyphen Gray School of Medicine out of Winston hyphen Salem, I think the problem would be solved. A small enough request. I'll watch my Ps, Qs, and -s closer from now on.*

Menopause — Some Comments

To the Editor:

Dr. Eleanor B. Easley's article "Important Facts about the Menopause" printed in the June 1983 *North Carolina Medical Journal* is indicative of an outmoded attitude that lacks validity and is personally demeaning. In Dr. Easley's effort to explain menopause to the layperson, she has taken a 1950's attitude that menopause damages one's femininity and therefore one's value as an individual and has perpetuated this myth so that the reader is led to believe that if, in fact, menopausal, then she is no longer "useful," "competent," "amiable," or of "social value."

While highlighting the estrogen risk controversy, Dr. Easley's social bias so interferes with her medical conclusions that the clinical aspect of the article is lost. Statements such as "women fare better if they can depend on men," and "It has become almost commonplace for men to desert menopausal wives for younger women," not only promote social misinformation but also rely upon opinion for their validity. To state that "to use up their extra time, women have turned to work outside the home" is to be out of touch with a time in which 50% of the workforce is female. To state that "The menopause erodes a woman's self-esteem" is to ignore all those educators, nurses, bankers, *and doctors* who continue to function productively throughout this period. Furthermore, references to *Time* magazine (1964 and 1966) are neither current nor academic.

Therefore, my question is not "Why not postpone the menopause" but rather why not illuminate menopause in the medical and psychological time of now. Unfortunately any patient naive enough to believe this article would probably be seeing the gynecologist who would put it in his waiting room.

Sue Ellen F. McNeil, Ed.D.
524 Roslyn Road
Winston-Salem 27104

To the Editor:

I have just finished reading Dr. Easley's article in the *North Carolina Medical Journal*, "Important Facts About the Menopause." I wish to congratulate her on assimilatin all facts and history that patients in menopause could find It is interesting and would be very helpful in allaying thei fears and helping them to adjust to the stage of life.

I would like to know if this article was written for th *Journal* or if it is available in booklets. If it is available t give to patients, would you please send me a cost list.

Ernest C. Richardson, Jr., M.D
New Bern 2856

The Editor replies:

Articles in the Features for Patients section of the Journal *are just that — features for patients. Physician wishing to reproduce any of these articles for distributio to appropriate patients are free to do so. In fact, an articles published in the* North Carolina Medical Journa *can be reproduced and disseminated. An alternative fo patient articles would be to place the* Journal *in you waiting room.*

Kempner Revisited

To the Editor:

Your article in the *NCMJ* for April 1983 entitled "Kempner Revisited" was of great interest to me.

The first summer Dr. Kempner came to Duke from his journey with Dr. Hanes from Germany I was assigned to him as his first resident on the Medical Service; this must have been about 1938 to 1939. He could never quite understand why the natives did not like his "Rice Diet" but loved the Basic Diet #1 that Drs. D. T. Smith and Julian Ruffin were using on their research in pellagra.

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The references you gave for 1944 and 1945 were published while a lot of us were overseas with the 65th General Hospital and were enjoyed by me after my return.

Thanks for your fine article. It brought back fond memories.

Joseph B. Stevens, M.D.
Greensboro 27408

Allergy Testing — Some Disagreement

To the Editor:

I read with interest the statement that the Committee on Blue Shield made in the May 1983 issue of the *NCMJ*. Unfortunately, it seems to be somewhat biased toward finding ways to avoid reimbursement for medical conditions as opposed to taking into consideration the needs of the patient and the part of the practice of medicine. The repeated references to certain forms of therapy not recommended by most allergy specialists are not generally accepted and depend an awful lot on which sub-family of allergy therapists you are talking with. . . . I would hope that somebody had bothered to contact Dr. John W. Foust in Charlotte since he is an officer in the American Academy of Otolaryngic Allergy.

As I am sure many of the people in the North Carolina Medical Society are aware, there is a "turf battle" going on in the field of allergy. There is a certain group of people who apparently feel threatened and are trying to prevent the practice of medicine by others by influence peddling and controlling of purse strings. To the best of my knowledge, this is not the usual and customary ethical way to practice medicine. . . .

I would like to know who the members of the Ad hoc Subcommittee on Allergy are and whether or not they plan on reviewing their findings in the near future or whether their findings are dictated by the Committee on Blue Shield.

Stephen A. Mitchell, M.D.
Rocky Mount 27801

The Editor replies:

The members of the Ad Hoc Committee were E. B. Coley, M.D. (Lumberton), Chairman; Jose A. Bardelas, Jr., M.D. (High Point); William S. Bost, Jr., M.D. (Greenville); T. B. Cannon, M.D. (Winston-Salem); and James C. Gaither, M.D. (Conover).

I have talked with John Foust and he will write an editorial which will appear in the Journal *in the near future.*

Joint Conference Committee: A Correction

To the Editor:

Your editorial and explanation of the joint conference committee was overdue. I enclose a letterhead which lists the present members of the conference committee. Rather than having two past-presidents [of the North Carolina Medical Society], the committee only has the slot for the immediate past-president, but does also have a slot for the president-elect.

Thomas B. Dameron, Jr., M.D.
Raleigh 27605

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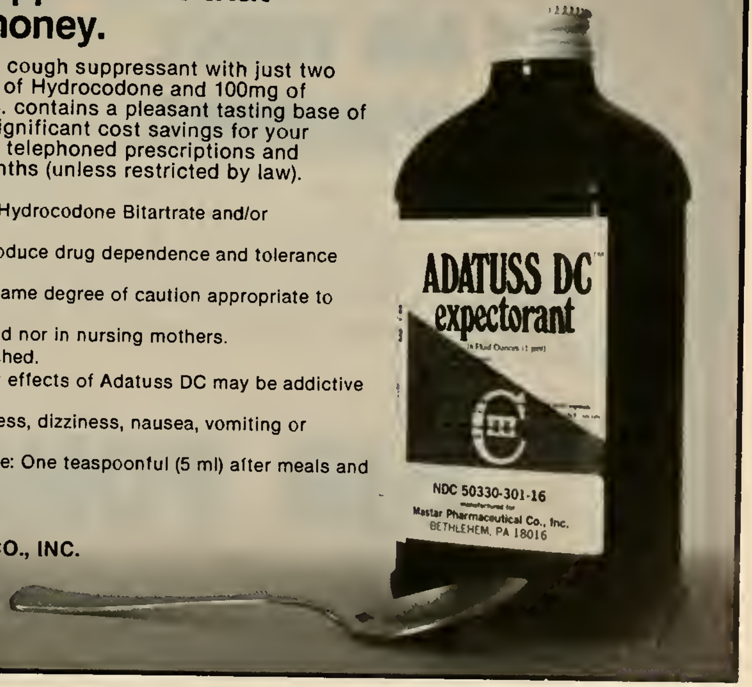

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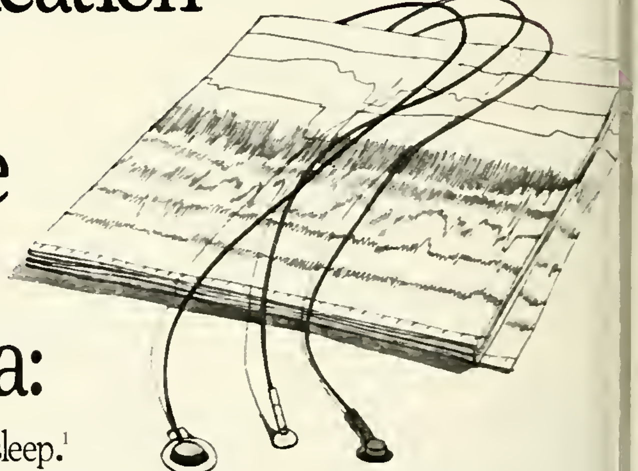

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Epilepsy by Patricia Gibson

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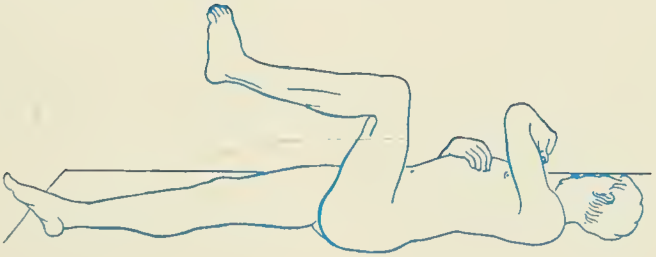

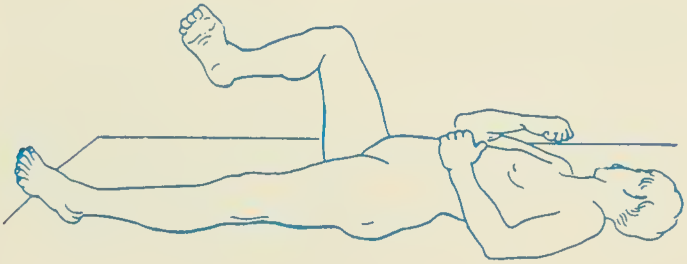

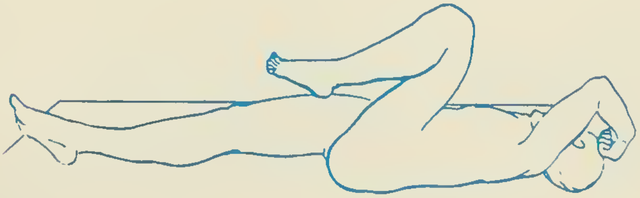

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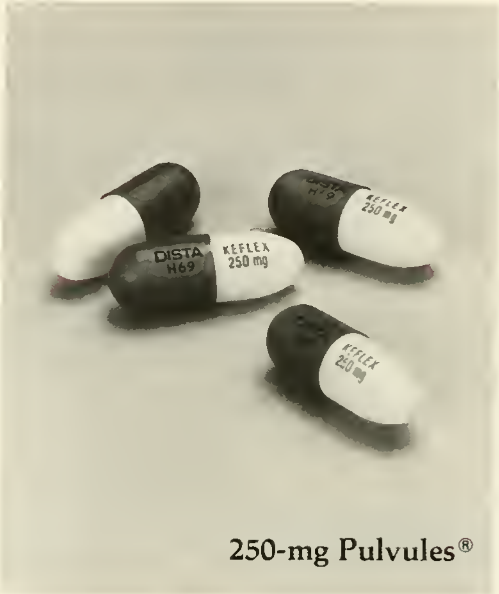

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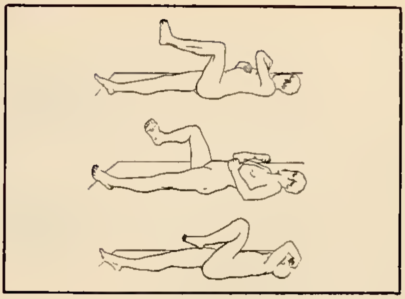

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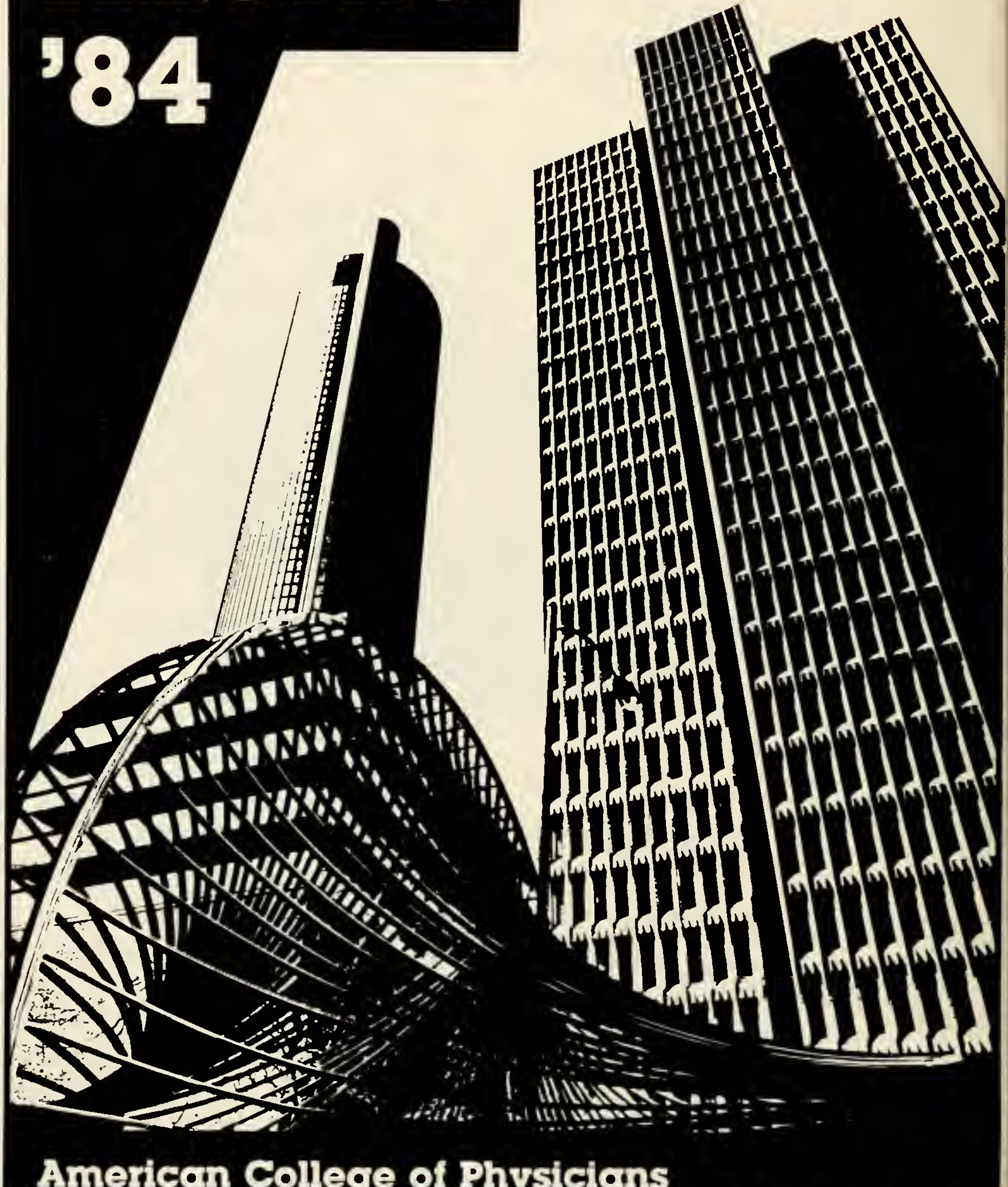

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EDITORIAL

Reflections on Midtrimester Pregnancy Termination by Dilation and Evacuation in a Free-Standing Facility

Roy T. Parker, M.D.

AFTER the change in the North Carolina abortion law in May 1967 (second to Colorado in the U.S.), there was a significant annual increase in the number of abortions performed until the early 1980s when the abortion occurrence rate seems to have stabilized. In North Carolina the rate is 23± range (20 in the U.S.) per 1000 women in the childbearing age group: 15-44 years (1,418,545 N.C. females in 1981). This means that 32,000± abortions are performed yearly in North Carolina. During the same 15-year interval the birth rate has decreased from approximately 110,000 per year to 85,908 (1982), despite a one million increase in population from 1970 (5,084,411) to 1982 (6,018,533). Regrettably, induced abortions have played a more significant role in the drop in birth rate than has contraception and sterilization. On the bright side, the maternal mortality has dropped from the range of 60 per 100,000 births in the 1960s to 12 in 1982. This decrease in maternal mortality has occurred primarily because high risk obstetric patients have an alternative to carrying a pregnancy that would endanger their lives. North Carolina is one of 14 states that has provided abortion services to "poor" women after federal funds were withdrawn. High-risk patients for "mother and baby" are early teenagers, women past 35 years and of high parity, and patients with medical diseases complicating pregnancy.

Of the 32,000± abortions done annually in North Carolina, approximately 4,254 (1981) are greater than 12 weeks gestation. Abortion data in the U.S. and from reporting countries over the world show that the complication rate, both morbidity and mortality, increases with the duration of pregnancy. For example, maternal mortality from induced abortion is 0.3/100,000 at 6 weeks and increases by roughly 30% for each week thereafter. Eighty percent of abortions are performed in non-hospital facilities (34 are licensed in North Carolina) mainly for economic reasons; however, for patients greater than 12-14 weeks gestation, less than 10% are done in free-standing clinics. In North Carolina at present, early abortions (less than 12 weeks) are performed in free-standing clinics and late abortions in the medical centers, for the most part. Dr. Crist and associates report their experience in 100 mid-trimester pregnancy terminations in a private free-standing facility after July 1980, and compare the data with 100 similar patients induced by intra-amniotic saline injection and pregnancy termination in the hospital, years 1979-1980. The authors conclude that there were only three complications in the Dilation and Evacuation group and 16 with Intra-Amniotic Saline (p value less than 0.005). Six patients had bleeding sufficient to need transfusion, one in the D & E group and five in saline-induced patients. Only eight patients in the saline group required D & C for retained placenta. There was no uterine perforation and no patient was febrile. Forty-two percent of the D & E patients and 71% of the saline group were Medicaid-sponsored. The total cost for saline interruptions as negotiated in 1980 for Medicaid patients was $550 and for D & E care $340 (61.8% less). Psychic considerations for patient and physician were discussed.

Concerning the clinical data, three comments seem worthwhile. First, it must be recognized from the outset that The Crist Clinic is a first-class pregnancy interruption unit with all the equipment, safeguards, and highly trained personnel that would be found in any ambulatory surgical facility and better than most. The knowledge, experience, and technical skill of the gynecologic surgeons are exemplified in the paucity of complications. They are professionals. Second, the paper illustrates clearly the importance of delivering health care on an ambulatory basis when feasible. They were able to effect a saving of 60% in patient costs for the dilation and evacuation group, and it is to be recognized that 59% of the 200 patients were Medicaid-sponsored.

The only real shortcoming of the paper is that only primary complications were listed. Abortion complications are best listed temporally, as follows: 1) immediate complications (develop within 3 hours of the procedure), such as uterine hemorrhage, perforation, cervical lacerations, anesthesia problems, coagulation defects, hypernatremia, water intoxication, embolism, and live-born fetus; 2) delayed complications (first day to 28 days), such as retained products of conception, infection, and pulmonary emboli; 3) late complications (after one month), such as menstrual abnormalities, infertility, abortion, ectopic pregnancy, prematurity, Rh sensitization, psychic disturbances, and death.

A followup report by Dr. Crist and associates would be of interest.

From the Department of Obstetrics and Gynecology, Duke University Medical Center, Durham, NC 27710.

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EDITORIAL

The Promotion of Physician Well-Being

John-Henry Pfifferling, Ph.D.

RARELY do medical meetings offer programs and discussions on the joys of high quality practice. Everyone knows of someone who thrives in medicine — offers quality care to his/her patients, balances his professional and personal life, and knows his strengths and limitations. But what are the factors associated with such vital persons? With the growth of the wellness movement a parallel interest area is evolving in medicine. Isn't it paradoxical that the science of medicine is so knowledgeable about patient management but primitive when it comes to awareness of the epidemiology of health among physicians?

Current incentives to analyze well-being and to foster environments that promote well-being stem from both the families of impaired physicians and the critics of medicine. Watching a colleague become impaired is often the only way physicians can realize the lack of well-being in their own lives. Unfortunately, the pain and empathy associated with seeing a friend succumb to the pressures of a medical practice awaken only a small portion of the medical community to what is needed to help the helping profession. Recently the American public and organized medicine have seen the problems of "impaired" physicians receive media attention. Sensationalized stories about impairment can lead to extreme reactions that reduce physician advocacy movements and constrain professionals. It seems then that professionals must address the needs of their colleagues when personal problems interfere with their ability to practice medicine. Protecting the public from errant colleagues is a key responsibility of organized medicine and the individual physician.

Publicity is usually given to the "dark side" of medicine, the roughly 15-20 percent of physicians (according to the June 1983 issue of *Focus on Alcohol and Drug Issues*) who become chemically dependent.

Physicians are apparently at high risk for impairment because of (1) continuous association with morbidity, (2) predisposed personalities that fuel internal criticism, (3) myths of invulnerability that deny the occupational risks of medical practice, (4) cultural values that prevent physicians from being treated like any other patient, (5) access to dangerous drugs, and (6) medical educators' resistance to dealing with the human cost of the professionalization process.[1]

An appropriate approach to preventing physician impairment stresses cooperative activities between the public and the profession in reducing unrealistic expectations. The public is unaware of the expectations and demands made of physicians-in-training and the heavy burden that is accepted as part of medical school and residency. The public often dismisses the possibility of normal behavior from the physician and expects instead heroic actions from a superhuman. Physicians resist displaying their reactions to death, disability, and discomfort more than most other workers.

Physicians have developed more resources to identify and mobilize help for their distressed colleagues than all other professions combined! However, there are still tremendous needs for therapeutic support and help, loan programs, career counseling, and family therapy for physicians. Funding for personnel, life planning services, research, and locally based self-care programs are urgently needed. Denial and resistance from both the physician and surrounding society make education efforts at prevention even more of a priority.

Prevention activities must foster training that reduces the tyranny of a memory and demonstrate that the well-being of the physician or student is a priority. For example, flexible residency and medical school graduation times allow the individual learning style of the physician to be recognized. Flexibility in training also allows individuals to define their medical image in a unique way rather than blindly follow a lock-step curriculum. Computerized information systems and computer-assisted learning modules are necessary tools that facilitate training in decision-making and reduce inappropriate memorization.

Practitioners and professional associations need to foster discussion of occupation risk factors, coping styles, and support for the "wounded healer." Maintenance of prejudices toward the reputed behavior and poor prognoses for recovering physicians do little to foster collegial concern. The truth may be that recovered physicians are more empathetic, less pharmacologic in prescribing patterns, and less aggressive when practicing, all items that are associated with "good" doctoring.

Both the American Academy of Family Physicians and the American Medical Association's Department of Health and Human Behavior offer materials and seminars on physician risk. These materials need wide distribution and

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From the Center for the Well-Being of Health Professionals, 5102 Chapel Hill Blvd., Durham, NC 27707.

discussion in an honest and supportive manner.

Individual physicians can take steps to prevent dysfunctional coping by clearly defining their own Principles of Practice[2] and practicing self-care. Materials on stress management and conflict resolution need to be studied and applied personally and professionally. Being in control of both your practice and personal life is an antidote to depression and stress. Physicians can take control by engaging in life planning exercises that involve their personal convictions.

Physicians can prevent chemical coping and depressive responses to the overburden of medicine by developing attitudes and behavioral patterns that recognize their personhood, and by identifying their needs and finding ways to satisfy them. Nonchemical coping styles can be modeled and taught.[3] Seminars for physicians and spouses on stress confrontation and resolution are timely and needed. Local associations of physicians can offer workshops that reinforce their social presence as the physician's advocate.

Physician impairment is a generic concept that allows us to begin recognizing the infancy of our knowledge of our own occupational group. Model physicians — healthy, successful, joyful practitioners — must be studied and their "immunologic" factors identified and reinforced over the entire gamut of work and training settings. When we understand the joy of medicine we will be closer to preventing the debilitating chain of impairment that robs our society of needed resources.

Medicine is a lifetime of dispensing hope. Isn't it time we dispensed preventive medicine for society's healers?

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SPECIAL ARTICLE

Hospital Medical Staff and the Impaired or Troubled Physician

Theodore R. Clark, M.D.

THE admonition "Physician, heal thyself" goes back to Biblical times and should serve as a constant reminder that physicians are subject to the same frailties and diseases as their patients.

There is some speculation to the effect that physicians believe that being in the healing profession might exempt them, to some extent, from health problems. Many physicians are certainly counter-dependent in the sense that they rely upon themselves and have almost an aversion to reaching out to other physicians for help. The opposite side of the coin from hypochondriasis is refusal to go get any kind of an annual check-up, avoidance of medical consultation or laboratory tests when it comes to the physician himself. For whatever reason, physicians are more daring about taking pills themselves than they are about prescribing same for their patients. This has been traditionally true about pain medications as well as sleeping pills and tranquilizers. Although availability of medicines for self-prescribing has been tightened up by legal controls, doctors, nurses and pharmacists still have much freer access to medications than the average patient and, unfortunately, the old caveat about "Physician, heal thyself" has been construed sometimes to mean "Physician, medicate thyself."

Be that as it may, physicians do become ill and sometimes these illnesses interfere with their practice of medicine. These illnesses may be physical or mental. They may represent the infirmity of the aging process without good judgment about retiring. Depending upon the nature of the physician's specialty, neuromuscular conditions involving eye-to-hand coordination may be a greater or lesser problem. For all physicians, mental illness is a problem, particularly if it is of the type which carries with it altered judgment and denial of the disease process so that the physician is apt to attempt things which are now beyond his reach and dangerous to the patient. Traditionally, the physician is apt to seek appropriate treatment for depression or anxiety but his denial system may preclude his properly evaluating the need for help with his manic behavior or alcohol or drug problems. A paranoid behavior would fit in this category, too, although paranoia associated with schizophrenia is usually screened out earlier on in a medical career. Sociopathic behavior unassociated with manic-depressive syndrome or alcohol or drug addiction usually results in some unethical or criminal behavior related to money or sexual abuse of patients and usually first comes to attention as a criminal charge.

Eighty percent of untreated physician disability, where the physician is still attempting to practice medicine, involves drug or alcohol abuse or addiction which may be associated with other underlying psychiatric conditions. I would like to tell you what has been and what is being done for this physician population, both in terms of their own health and as it relates to protecting their patients.

The physician alcoholic or drug-dependent person undergoes the same psychological degradation as any other alcoholic. The over-indulgence in alcohol or drugs sooner or later produces some behavior which compromises the physician's value systems. This may involve some flagrant behavior at home or socially or even eventually at the office or hospital but, even earlier, may involve a lack of consistent enthusiasm for carrying out projected plans leaving the physician disappointed in himself. Inevitably, this produces a feeling of guilt, embarrassment, shame and lowered self-esteem. This guilt is intolerable, of course, and summons up an array of psychological defenses to minimize the guilt. The so-called denial system is the most primitive of these defenses and simply states that the problem doesn't exist so there is nothing to feel guilty about. Along with this comes a variety of rationalizations and alibis justifying any particular drinking episode or any particular use of a drug and a general haughty and defensive attitude towards anybody who questions the physician's judgment or diagnosis of himself. As the disease progresses, job performance becomes somewhat erratic, patients are often rescheduled, and sometimes the physician volunteers for extra work assignments to prove to himself and everybody else that he is working very hard and is a very functional member of society. This produces a certain self-righteousness and irritability with his peers and nursing personnel and all this overwork, of course, justifies the next drinking episode. Without any overt drinking in the hospital setting, the doctor's relationship with his peers may deteriorate. He may become defensive, critical of other people, may become delinquent in his charting, his prescribing habits may change, and, in general, he begins to drop off committees, feel overworked, misunderstood, picked on by other members of the department, in need of frequent vacations which don't seem to do any good, et cetera. This sensitivity is progressive and the physician tends to isolate himself. He loses the friendly exchange with people in the hospital or in his office and he may look depressed or a little disheveled or preoccupied or certainly

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From Post Office Box 1569, Pinehurst, NC 28374 grumpy. He tends to become cynical about hospital politics and patient care and loses a great deal of the joy of the practice of medicine. He may be particularly verbal about this during drinking episodes. This may produce some social quarrels amongst other physicians or their families at social events and, about this time, there is usually a dropping out of social life with peers and the physician family becomes isolated as well. It is not uncommon to see a doctor at this stage drop out of a group, off a hospital staff, or out of the medical society. The situation may become aggravated by some rumor or actual complaint that the doctor has alcohol on his breath or was "a little the worse for wear." Severe marital problems may crop up at this point and the physician may, on occasion, establish an alliance which he feels is more understanding than his wife or family. Divorces are frequent and often used by the physician to justify and excuse any drinking that has come to the attention of the staff. If the situation is progressive, there is progressive personality deterioration and sooner or later actual incidents of drinking behavior or clinical dysfunction begin to occur in such a way that they cannot be overlooked by colleagues, office help, or patients.

The physician may be in a better position than some people to enlist the sympathy of his colleagues and the general public by portraying himself as the tragic overworked hero. He may also be in a somewhat better power position to intimidate or threaten people who are trying to help him and, of course, he has access to various tranquilizers to cover up withdrawal symptoms. It also seems to be true, at least in part, that people are loathe to blow the whistle on a physician until things are really pretty bad. Classically, in the past, there was a great tendency to cover up until finally something terrible happened and then the medical community completely divorced itself from any identification with its wounded compatriot. This behavior is not unique to the medical profession but is shared by any strong grouping: military officers, executives, professional groups, etc. This is part of the protective instincts of groups.

Alcoholism and drug dependence are diseases that nobody wants to diagnose on himself. It might be fair to say that physicians were paradoxically the last to make the diagnosis on themselves although they were busily self-medicating with alcohol or drugs or both. Fellow physicians seemed, in most cases, to have no systematic approach for early and effective intervention. Situations were tolerated where physicians were periodically dysfunctional and a danger to themselves and to their patients. Often nobody seemed to be able to mobilize to do anything about the situation until some flagrant acting out provoked severe restriction and disciplinary action. The physician in question was often overwhelmed by the sudden collapse of his entire pattern of life and suicides were not uncommon. The most dramatic reporting of this was from Oregon where eight out of twenty physicians studied, when on a probationary status with their licenses revoked, or likely to be, wound up committing suicide. In the 1970s, things began to change. Alcoholism was coming out of the closet and becoming a more socially acceptable disease. This allowed industry, airlines and professionals to attempt earlier intervention and salvaging of valuable personnel. Industry became convinced through the employee assistance programs that they would save money by treating an alcoholic executive rather than replacing him.

The other, and perhaps more compelling, motivation for change in the impaired physician came from third-party payments and consumerism. The Joint Commission on Accreditation of Hospitals is tied in with third-party payment; utilization review, peer review and Medicare/Medicaid review have led to scrutiny not only of the physical hospital plant but also of charts and finally of the health of the health providers. Not only must the hospital-based physician meet Continued Medical Education requirements but there must also be a review of his health by his department head. A document signed by the appropriate heads of the clinical departments or by the Credential Committee in smaller hospitals states that the applicant's health in reference to his or her ability to exercise hospital privileges has also been considered. This document is signed when hospital privileges are renewed, usually at three-year intervals. It becomes more difficult to overlook a colleague's health problem when there is an implied or potential liability in the event of malpractice.

Thirdly, there has been a tightening up of prescribing practices, of what samples can be sent through the mail, and of accountability of such office supplies as tranquilizers, sedatives, amphetamines as well as narcotics. Sophisticated computers make it much easier to establish a profile of a given physician's prescribing habits and the likelihood that he may be involved with self-medication. By the early 1970s, the AMA began studying and having conferences around the impaired physician and suggesting model programs which could be used by different states. In 1981, the North Carolina General Assembly passed an amendment to the Medical Practices Act, at the urging of the North Carolina Medical Society, which requires the North Carolina Board of Medical Examiners to report to the Physicians' Health and Effectiveness Committee any physician who comes to the attention of the Board who is thought to have possibly a problem with alcohol, drugs, or mental illness. In addition, each hospital administrator is required to report to the Board any physician who resigns, has privileges reduced, or is suspended from the hospital staff. If the Board finds reason to believe that impairment exists, the case is referred to the Committee. This new legislation took effect in January 1982.

In North Carolina in 1978, an ad hoc committee became the official Physicians' Health and Effectiveness Committee joining the growing number of states whose medical societies provide a disabled or impaired physician program. This committee was created and appointed by the incumbent Medical Society president and the work of this committee has been supported and encouraged by each succeeding president. Included on the Committee are a number of recovered physicians who, because of their personal experiences, may be helpful in terms of breaking through the physician-patient's denial system. The scope and thrust of the Committee's work are best detailed in the brochure used by the Medical Society and are as follows:

> This Committee was established to aid physicians whose health and/or effectiveness have been significantly impaired by alcohol or drug addiction or mental illness.

Assistance is initiated by calling the Medical Society (919/833-3836) and asking for the Physicians' Health and Effectiveness Program (PHEP) staff person.

Under all of the options the overall goal is to assist the impaired physician to preserve his own health and thus to continue his primary mission of treating patients in the most effective manner.

The program is guided by the following basic principles:

Humanitarian concern for the public and the impaired physician.

Recognition that alcoholism, drug abuse, and mental illness among physicians are too often ignored or untreated.

Recognition that alcoholism, drug abuse, and mental illness are treatable conditions and that treatment and rehabilitation personnel with skills in these areas have a good success record.

Encouragement of all impaired physicians to seek help and cooperate in treatment at the earliest possible time in order to retain or regain full effectiveness to practice.

The employment of constructive coercion (Option II) in order to encourage impaired physicians to obtain necessary assistance when the impairment poses a threat to reasonable delivery of health care.

The employment of legal coercion (Option III) when all other efforts have failed and the physician's impairment threatens the public or the physician's health.

In most cases, complaints which have been called in to the Medical Society are easy enough to verify and validate by the Committee chairman. At this point, the physician in question is contacted by phone and by letter, sent a brochure by the chairman and a notification that he will be contacted by two interveners of the Committee. They, in turn, set up a treatment program for the physician-patient which is then reported back to the Committee chairman. Following treatment, a monitoring process is set up and also a program for ongoing treatment such as attendance at AA, whatever drug screens may be required, and reports on the physician-patient at Committee meetings. Should a relapse occur, a new intervention is initiated. Often, we are dealing with referrals from the Board of Medical Examiners and they provide a monitoring system of their own. We feel that it is important that the monitor and the therapist not be the same person for obvious reasons. Option III has rarely had to be used, as it seems that most physicians would rather deal with the Physicians' Health Committee than with the Board. Often it is discussed, however, as a powerful motivator towards continued treatment and, in rare instances, we have had to tell the physician-patient that we have been unable to help him and are going to refer his complainant to the Board of Medical Examiners. Incidentally, in the Medical Society, referral sources may be kept anonymous but, if the matter is passed on to the Board, their own independent investigation for the record and entailing due process is made. Since 1978, 75 patients have been identified and officially followed by the Committee. A significant number of other physicians have called voluntarily asking for help before we received any official referral complaint about them. These physicians are not included in our statistics but probably should be because we feel that the publicity about the physician impairment program is bringing many into earlier treatment anticipating detection and intervention.

In 1981, the Auxiliary of the North Carolina Medical Society established a committee to provide information and assistance to the families of physicians about any drug or alcohol problems that they themselves might have. A hotline has been established where they may call anonymously for information. Since, predictably, the family is much more likely to know about the physician impairment before the colleagues, this is another attempt at speeding up the diagnosis and intervention.

An earlier survey estimated that alcoholism took about thirteen years to diagnose. We hope that the work of our committees along with increased peer review, tightening up of prescribing habits, as well as changes in the Medical Practices Act, will substantially shorten this time. This should facilitate earlier intervention which, in turn, may help to save the careers of our colleagues and to preserve the health of their families as well as afford better protection for the patient by providing him with a healthy and effective physician. This is, of course, our first and foremost concern and continuing obligation.

SCIENTIFIC ARTICLE

Ascariasis at North Carolina Memorial Hospital

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RESIDENTS and medical students receive very little information about common intestinal parasites. For example, the number of hours taught to first-year medical students at the University of North Carolina was halved this past year by the curriculum committee. In order to help disseminate current clinical information about parasitology, a clinical parasitology group was formed. As a part of its activities, the group reviewed the charts of all patients with parasitic infections for the past five years. This article describes patients infected with *Ascaris lumbricoides* and is the first in a series which we hope will help define the spectrum of clinical illness caused by intestinal parasites in North Carolina.

Infection with *Ascaris lumbricoides*, while estimated by some to be present in one-fourth of the world's population,[1] is seen less frequently in the United States than in other parts of the world. This is primarily because of dramatic improvements in sanitation systems, but other factors have been found to be associated with the infection, including the density of population, geophagia, education, and occupational exposure to soil, especially in areas where human excrement is used as fertilizer (nightsoil).[2] In spite of this decrease in the United States, areas of high prevalence of infection remain; as recently as 1974, almost a third of the population screened at Hilton Head Island, South Carolina, was infected with ascaris.[3] In North Carolina, of 5927 specimens received during 1982 at the State Laboratory (a selected population), 64, or a little over 1%, were positive for *Ascaris lumbricoides* (personal communication — George Robertson).

Diagnosis and Treatment

Ascariasis is most commonly diagnosed by stool examination. Female *Ascaris lumbricoides* lay over 100,000 eggs per day, and one stool exam may be all that is needed to diagnose the infection; three stools will diagnose virtually all infections. The worm, which may be as large as 30 cm long, may also be passed in stool, or coughed up, which, while a striking sight, is not harmful.

Treatment of ascariasis is easily accomplished with mebendazole (Vermox) in a dosage of 100 mg BID for three days in adults or children over two years of age, or pyrantel pamoate (Antiminth) in a single dose of 11 mg/kg (adults or children). It is important that patients with multiple parasitic infections including ascariasis be given their anti-ascaris medications prior to any other anthelminthics. *Ascaris lumbricoides* will migrate to avoid less effective drugs, and this migration may cause one of the serious complications noted below.

Complications

While serious complications of ascaris infection, such as intestinal obstruction, biliary obstruction, necrotizing enteritis, or liver abscess, are rarely seen except in endemic areas, the true pathological potential of *Ascaris lumbricoides* has not been clearly elucidated. It is the commonest cause of Loeffler's syndrome, almost certainly causes nutritional disturbances, probably is associated in endemic areas with seasonal asthma, and may cause eosinophilic arthritis.

Description of Case Series

Demography. A total of 34 patients were diagnosed between 1977 and 1982. Seven of the patients (21%) were white, 25 (74%) were black, and one each were Hispanic and oriental. Fourteen (41%) were male and 20 (59%) female. The mean age of the population was 18 years. Sixteen (47%) were greater than fourteen years of age.

Diagnosis. Six of the 34 (18%) cases were diagnosed because eosinophilia led to the ordering of a stool examination; four (12%) had stool exams ordered because of gastrointestinal symptoms. Nineteen, or 56%, were diagnosed after a worm was either passed in the stool or vomited. The reason for stool being ordered was not available for the remaining five patients. Eleven (32%) were diagnosed as outpatients, the rest as inpatients. Among the inpatients, the average time from admission to diagnosis was 9.8 days.

Symptoms. Gastrointestinal symptoms, by age groups, are shown in table 1. Although the adults tended to have more symptoms, none of the differences noted were statistically significant. One adult and one child had a history of wheezing noted in their charts.

Laboratory. The mean eosinophil count of the 22 patients who had differentials performed was 8.0; however, 13 (60%) had eosinophil counts below 5%. White blood cell counts and hematocrits were generally normal (mean 11,000 and 35, respectively); when abnormal they tended to reflect concurrent disease.

Table 1.
Gastrointestinal Symptoms of Ascaris Cases by Age

	Abdominal Pain	Diarrhea	Vomiting	None
≤ 14 years (N = 18)	2 (11%)	2 (11%)	2 (11%)	12 (66%)
> 14 years (N = 16)	3 (18%)	5 (31%)	1 (6%)	8 (50%)

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Table 2.
Coexistent Diseases Found in Ascaris Patients

Adults
Carcinoma of breast, metastic
Carcinoma of colon, metastic
Gastric fistula
Lactose intolerance
Disseminated granulomatous disease
E. coli sepsis
Diabetes, hepatitis, toxic epidermal necrolysis, sepsis
Osteomyelitis of heel
Acute renal failure, staph sepsis
Encephalitis
Children
Acute suppurative appendicitis
Severe burns (2)
Seizure disorder
Developmental delay, failure to thrive
Bilateral subdural hematomas
Imperforate anus, myelomeningocele
Trauma
Ependymoma

Coexisting Disease. Five patients were recent immigrants; four of these five had multiple parasitic infections, including one with hookworm, one with giardia, and two with *Trichuris*. Two of the domestic cases had concurrent visceral larva migrans. A list of other diseases found in the ascaris cases is listed in table 2.

Case Histories

A 50-year-old while male biology professor at the University of North Carolina presented to the Medicine Clinics with complaints of easy fatigability, episodic dyspnea and a 7 kg weight loss. He described a dull upper quadrant aching pain, abdominal distention, anorexia, and three to four loose foul-smelling stools daily. Stool exam revealed ova of *Ascaris lumbricoides*, and the patient was treated. On a return visit six months later, he was asymptomatic and his weight was stable.

An eight-year-old black male was admitted emergently with a six-hour history of abdominal pain and fever. He had no history of prior gastrointestinal complaints. Physical exam revealed a right psoas sign and right lower quadrant guarding; his white blood cell count was 12,000 with 4% eosinophils. At surgery he was found to have a perforated appendix. Two days postoperatively, he pulled a large roundworm from his throat which was identified as *Ascaris lumbricoides*.

Discussion

Although Pawlowski, in his excellent encyclopedic review of ascariasis,[4] reported a number of characteristic intestinal complaints (abdominal pain, loose stools, vomiting and anorexia), over 50% of the cases in this series were asymptomatic, and were diagnosed either when a worm was passed or when eosinophilia was noted on a differential. Many of the patients had chronic serious illness which led to a lengthy hospitalization, such as osteomyelitis, encephalitis, carcinomas, burns, and congenital anomalies. Ten of the 23 inpatients passed worms in the hospital. Because of the intermittent nature of symptoms and eosinophilia in many nematode infections, patients with long hospital stays may be expected to come under scrutiny, leading to diagnoses that might have otherwise been missed; this has been noted in *Strongyloides stercoralis* infection and represents an example of detection bias.

The lack of a consistent eosinophilia in patients infected with *Ascaris lumbricoides* makes its detection more difficult. In patients with *Strongyloides stercoralis* infection, eosinophilia is more commonly present; over 90% of infected patients have eosinophil counts of greater than 5%, compared with 40% of this series of ascariasis.

While *Ascaris lumbricoides* infrequently causes symptoms, it may be a more serious infection in patients with profound illness. Fever causes migration of the adult worm,[2] which may explain why many worms were passed from patients in this series with infectious diseases. The serious complications of ascariasis are due to migration of the adult worms; thus settings in which migration is promoted are high risk for serious complications. Intestinal obstruction, for example, occurs normally in two per thousand infected children and biliary obstruction less frequently. In the presence of acute or chronic illness with infection, this rate may be expected to increase with the severity of the disease and the worm burden.

Consideration of ascariasis in patients with chronic disease may lead to early diagnosis and treatment, and may prevent some of the more serious complications of the infection. Factors that might raise the question of ascariasis include poor socioeconomic situation, geophagia, rural homesite, and exposure to soil occupationally or recreationally. When these factors coexist, stool examination for *Ascaris lumbricoides* should be performed even in the absence of eosinophilia, wheezing, or abdominal complaints.

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SCIENTIFIC ARTICLE

Laparoscopic Clip Sterilization in a Free-Standing Facility: An Evaluation of Cost and Safety

Takey Crist, M.D., Paul Williams, M.D., Sara H. Lee, Jaroslav F. Hulka, M.D.

IN the 1970s laparoscopic sterilization in the United States reached 250,000 annually. This expanded interest in sterilization led to the evaluation of surgical and anesthetic techniques which carry sufficiently low risks to be performed in facilities other than hospitals.[1-4] Reports from the United States were from a family planning clinic,[1] from a hospital-based ambulatory care facility,[3] or a private free-standing operating room ambulatory care facility using general anesthesia.[4] Only one unpublished report (Lee SY, unpublished data) describes a service in a free-standing surgical facility using local anesthesia with no anesthesiology back-up. In addition, it is now possible to identify low-risk patients for elective laparoscopic sterilization procedures, reserving high-risk patients for the more appropriate operating room facilities.[5] These trends led the North Carolina Medical Care Commission in 1979 to approve the performance of laparoscopic sterilizations in free-standing facilities approved for other surgical procedures.[6] This report presents the first 101 patients in a free-standing facility undergoing laparoscopic sterilization without routine anesthesiology back-up, and will discuss cost and safety aspects of this approach.

Methods and Materials

Clinic Facilities

The Crist Clinic in Jacksonville, North Carolina, is a private facility housing a Surgical Ambulatory Care Center with three procedure rooms and three recovery rooms, including resuscitation equipment. An Ob-Gyn table capable of Trendelenburg positioning and knee-supporting stirrups is available. Stretchers transfer the patient to recovery rooms from which she is discharged ambulatory. The clinic is three minutes away from the Onslow Memorial Hospital where the clinic physicians have admitting privileges. To introduce laparoscopic sterilization, only the surgical equipment (light and gas source, laparoscope and accessory instruments) needed to be added to the existing facilities.

Patient Selection for Surgery

All patients requesting sterilization are considered candidates. Those with cardiac or pulmonary problems placing them in a Class II or greater anesthetic risk are referred to the hospital for anesthetic surveillance and management during laparoscopy. Patients judged to have excessive abdominal fat (over 3-4″ thick abdominal wall below the umbilicus) are also referred to the hospital for operating room facilities. Previous pelvic surgery, age or parity was not a contraindication in this series.

Procedure

A history and physical are done before the day of the procedure, and all appropriate laboratory tests (e.g., EKGs and chest x-rays for women over 40) and consent signatures are obtained. The patient is asked not to eat or drink after midnight before surgery. She is brought to a recovery room to change and have an I.V. started on a stretcher; 20-25 mg diazepam is given orally at least 30 minutes before surgery. After voiding the patient walks to the procedure room and is placed in the dorsal lithotomy position. Sublimaze (0.05-0.1 mg) is given intravenously by a registered nurse who then monitors vital signs throughout the procedure. A warm Betadyne solution is used to prepare the abdomen and vagina, and a controlling sound and tenaculum are passed into the uterus. After draping, the abdominal wall below the umbilicus is infiltrated with 6-10 ml of 1% lidocaine. A Veress needle instills about 2½ L. nitrous oxide into the abdominal cavity, and a 12 mm Wolf trocar and sleeve are inserted through a subumbilical incision. This allows the passage of a 12 mm operating laparoscope with a 7 mm channel for the spring clip applicator. Manipulating the uterus from below allows both tubes to be visualized and clipped at mid-portion of the isthmus. After confirming the correct application, all instruments and nitrous oxide are removed, and the incision is sutured with 3-0 plain catgut.

The patient is brought back to the recovery room by stretcher and is discharged when her vital signs are stable and she is alert, oriented, and able to walk. She is discharged with a responsible adult and printed instructions for postoperative care, including the clinic phone number and a 6-week postoperative appointment.

Method of Data Collection and Analysis

In October 1981 a trained medical record abstractor (SHL) of the University of North Carolina was given com-

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plete access to the clinic charts of all patients who had undergone this procedure since its inception in 1980. Billing records of the clinic, as well as those patients referred to the hospital for general anesthesia in 1979 and 1980, were also made available. All pertinent data, excluding patient identification, were recorded on separate forms and analyzed at the University of North Carolina.

Results

Patient Characteristics

The demographic characteristics of the patients are shown in table 1. The majority were white, married and receiving medical assistance. Medical data revealed the following ranges and medians: age range 20-44, median 30; living children 0 to 6, median 2; weight 98 to 204 lbs, median 131. These characteristics are comparable to other sterilization series in the United States.

The contraceptives used are listed in table 2. IUDs were removed at the time of surgery. Of the 32 patients using no contraceptives, three were pregnant and underwent combined sterilization and pregnancy termination, three were six weeks post termination, and two were six weeks postpartum.

Previous surgery is listed in table 3. Although one patient had three previous cesarean sections, we encountered no surgical difficulties in these 23 women.

TABLE 1
Demographic Characteristics

	No. Patients
White	65
Non-white	35
Oriental	1
Married	56
Medicaid	57

TABLE 2
Contraceptive Use

Method	No. Patients
Oral contraceptives	36
IUD	10
Other	23
None	32

TABLE 3
Previous Abdominal Surgery

	No. of Patients
1 cesarean section only	2
3 cesarean sections	1
1 cesarean section, 1 appendectomy	1
Appendectomy	12
Ovarian cystectomy	5
Other non-pelvic surgery	2
Total	23

Operative Procedure

Surgery took an average of 28 minutes, with a range of 8 to 55 minutes. Two clips were applied to each tube (as routine early in this series) in 16 patients; two required a second clip on one tube, and the others had a single clip application per tube.

After surgery, an average of 86 minutes was required for recovery. It is notable that 16 patients left within one hour of surgery, and only 12 patients required two hours or more of observation. No patients required more than 1,000 ml of fluids intravenously after surgery, and no patients complained of postoperative pain or vagal reflex requiring atropine. Nausea was a frequent postoperative complaint, but no medication was required.

Complications

Operative and postoperative complications are summarized in table 4. One failed trocar insertion was due to the patient's obesity, and the operation was not completed. One clip fell out of the applicator into the pelvic cavity and was successfully retrieved using a grasping forceps; the rest of the procedure went without incident. One patient vomited during surgery, expelling the trocar sleeve and about 2½ inches of omentum through the incision. The omentum could not be reduced, but was ligated and divided at the incision site. This occurred after successful tubal clip application. This lady later had excessive vaginal bleeding, probably related to the fact that she had had a combined midtrimester abortion as well as tubal ligation. Because of this combination of complications, she was referred to the hospital emergency room where she was observed and discharged without further incident. She had an estimated blood loss of 230 ml. Postoperatively, three patients complained of superficial wound infection and two of abdominal pain; six had vaginitis. One additional patient complained of heavy bleeding after tubal ligation but further treatment was not required. No patient underwent hospitalization because of complications.

Three pregnancies were detected after sterilization. One patient had been pregnant at the time of tubal ligation and

TABLE 4
Complications

	No. of Patients
Operative	
Failed trocar insertion	1
Loose clip retrieved	1
Extrusion of omentum, vaginal bleeding (combined midtrimester dilation and evacuation and sterilization referred to emergency room)	1
Postoperative	
Vaginal bleeding post sterilization	1
Wound infection	3
Abdominal pain	2
Vaginitis	6
Urinary tract infection	1
Post-sterilization pregnancies	
Pregnant at time of sterilization	1
Correct application	1
Unknown reason	1

later underwent a dilation and evacuation. One patient returned 9 months after surgery and underwent only a dilation and evacuation without further study of the tubes. The third patient returned at 10 months to have a total abdominal hysterectomy, right salpingo-oophorectomy, left salpingectomy and appendectomy. Pathologic examination of the tissue within the clip revealed persistent canalization in one tube.

Cost

Patient billings for these procedures were reviewed, together with a sample of patient billings from the local hospitals for a 24- or 48-hour admission and general anesthesia for the same procedure. Total costs in the free-standing surgical facility were 30-45% those of the same procedure in the local hospital, representing savings in hospital room and board, anesthesiology, and operating room fees.

Discussion

This series represents the early experience with laparoscopic sterilizations without anesthesiology back-up in a free-standing surgical facility. Successful avoidance of complications under these conditions requires careful selection of techniques, patients, and physicians.

Technique

The local anesthetic technique chosen had been developed[7] to minimize anesthetic risks. With proper monitoring of vital signs and gentle surgical technique, the discomfort experienced with laparoscopy is comparable to that of dilation and evacuation, a procedure done under similar conditions extensively throughout the country. The clip technique was similarly chosen because it too had been developed[8] to minimize the risk of hemorrhage and electrosurgical bowel injury.

Early in the series, to test the feasibility of applying clips without the use of a laparoscope, one patient underwent a minilaparotomy under local anesthesia. She required 30 mg diazepam, slightly more than other patients in the study and had an estimated blood loss of 50 cc (slightly more than the average of 30 cc noted in other cases). The operative time was also longer (95 minutes), but the recovery time was standard. Our impression was that laparoscopy could be more efficiently performed than minilaparotomy in this facility.

Patients

The one patient who needed emergency room treatment after surgery represents a probable relative contraindication for this procedure, since manipulation of the enlarged midtrimester uterus, even though evacuated, caused sufficient discomfort to induce vomiting and omental herniation. As has been noted earlier,[8] women who wish to undergo combined midtrimester abortion-sterilization procedures can be difficult surgical challenges best served by postponing the sterilization to 4-6 weeks after evacuation when the uterus has involuted to normal size.

With this exception in this early experience, all patients but one (a failed trocar insertion) underwent successful sterilization. This includes 23 women with previous abdominal surgery, and five women weighing over 175 lbs. Although previous abdominal surgery and obesity can increase risk of laparoscopy, an experienced clinician can select those patients falling within acceptable risk limits for a free-standing facility.

It is important to emphasize that most women seeking elective sterilization in the United States are surgically low risk patients, and therefore potentially suitable for such facilities. Healthy, non-obese, multiparous, cooperative women with no previous abdominal surgery constitute the majority of the 250,000 women seeking laparoscopic sterilization annually.[9] A computer search of the literature and personal communication with several editors has failed to reveal a discussion of the cost-containment aspects of laparoscopic sterilization under local anesthesia with no anesthesiology back-up in a free-standing facility. At an average cost for hospitalization of over $1,200, and of an "out-patient" operating room facility with general anesthesia of over $1,000, there is a current annual expenditure of over $250 million for laparoscopic sterilization. If only half of these women were chosen as low risk and used a free-standing surgical facility with local anesthesia as described, the annual savings would be over $70 million ($250 million × 50% women eligible × 60% reduction in cost). Since the majority of women in this particular study were receiving medical assistance, the cost aspects of these services were of particular interest to the county health department, whose public funds derived the benefit of this 60-70% reduction in cost.

It is also important to point out that no patients required hospitalization in these first 101 patients, since most complications occur early in an experience with a new surgical technique. The careful selection of technique and patients for these facilities thus was done at no increased medical risk of complication for the benefit of a dollar reduction in cost, and affirms the North Carolina Medical Care Commission's judgment in these important considerations.

Physician

This procedure should not be performed in all free-standing surgical facilities. The key to safe delivery of care in such a facility is the selection of the physician, who should have considerable experience in the performance of laparoscopy under local anesthesia before attempting this in a free-standing facility. A suggested guideline is 200 laparoscopies, of which at least 100 have been attempted under local anesthesia in the operating room *with* anesthesiology back-up. Such a prior experience will provide the physician with the skills and judgment necessary to select appropriate low risk patients for a free-standing facility, and to know when to back off from further surgery in an unexpectedly difficult situation, as happened with one failed trocar insertion in this series.

In today's era of cost containment in medical care, experienced physicians can minimize complications and decrease costs by selecting low risk patients for low risk surgical and anesthetic techniques in facilities other than a hospital operating room.

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SCIENTIFIC ARTICLE

Midtrimester Pregnancy Termination: A Study of the Cost Effectiveness of Dilation and Evacuation in a Free-Standing Facility

Takey Crist, M.D., Paul Williams, M.D., Sara H. Lee, Jaroslav F. Hulka, M.D.

IN the United States 1.2 million first or second trimester pregnancy terminations are performed annually, of which about 100,000, or 9%, are second trimester (defined as 13 to 20 weeks after the last menstrual period). This persisting proportion of midtrimester terminations presents a continuing need to provide the safest and most cost effective techniques and facilities for these procedures. In the 1970s hospitalization and instillation of hypertonic saline (S) or prostaglandin (PG) was the standard method of management. Favorable results were noted using Dilation and Evacuation (D&E) on these larger uteri as an alternative method.[1-6] In 1980, Grimes, Hulka and McCutchen reported a random-assignment control study comparing hospital terminations using PG to performing an out-patient D&E in a teaching hospital.[7] The safety of D&E, as well as the reduction of psychic trauma to the patient, was documented.

As a result of these developments, in 1980 the North Carolina Medical Care Commission approved the performance of D&Es in free-standing facilities as a method of management of midtrimester terminations.[8] We wish here to report the experience of performing the first 100 such terminations in a private free-standing facility and to compare them with patients hospitalized for saline infusion.

Patient Selection

All patients presented for midtrimester pregnancy interruption at the Crist Clinic in Jacksonville, North Carolina. Beginning in July 1980, all patients thought to be 13 to 16 weeks pregnant underwent D&E at the Surgical Ambulatory Care Center of the clinic. The clinic charts of the first 100 consecutive patients meeting these criteria were reviewed.

For comparison, the clinic records of 1979 and 1980 were reviewed to select 100 patients thought to be 13-16 weeks pregnant at the first visit. The standard practice prior to July 1980 was to schedule these patients for admission to the Onslow Memorial Hospital when they were thought to have reached 16 weeks gestation. They underwent uterine contraction and evacuation in the hospital after saline instillation. The hospital charts of 100 consecutive patients meeting these criteria were reviewed.

Technique Used

Dilation and Evacuation: After an iodophor vaginal prep, 20 cc 1% xylocaine is used as a paracervical block. No laminaria are used. Pratt dilators are then used up to #59. A 16 mm plastic vacuum curette and tubing is in-

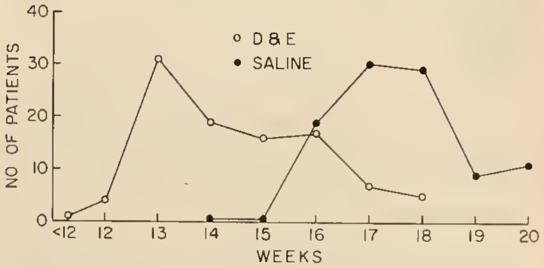

Figure 1. *Actual weeks of gestation of fetus as determined by foot measurements. Patients undergoing dilation and evacuation were judged to be below 16 weeks, those undergoing saline were judged to be at least 16 weeks. The range of clinical error is similar for both groups.*

From the Crist Clinic, 200 Memorial Drive, Jacksonville, NC 28540 (Drs. Crist and Williams) and the Department of Obstetrics and Gynecology, The University of North Carolina, Chapel Hill, NC 27514 (Ms. Lee and Dr. Hulka).

serted and the uterus is evacuated. Grasping forceps and a Banjo curette are sometimes required as well. The actual gestational age, based on foot measurements,[9] is recorded. The patient is observed in recovery for a minimum of 2 hours and discharged with prophylactic Methergine, antibiotics (as recommended by the Centers for Disease Control), iron supplement, and any method of birth control requested.

Saline Instillation: The patient was asked to return to the clinic when thought to have reached 16 weeks gestation. An alcohol prep of the lower abdomen preceded an 18 gauge spiral needle insertion into the uterine cavity. When amniotic fluid was seen to be coming out, 250 cc 20% saline was allowed to flow in by gravity.[10] Vital signs were observed for 15 minutes, after which the patient arose and went to the hospital for admission. Uterine contractions received pain medication as needed. At evacuation, curettage was performed if complete products of conception were not identified or heavy bleeding occurred. The actual gestational age was recorded based on foot measurements. Patients were kept hospitalized for observation until stable and were then discharged on prophylactic Methergine and any method of birth control requested.

Method of Data Collection and Analysis

In March 1982, a trained medical record abstractor (SHL) of the University of North Carolina reviewed the clinic and hospital charts selected as described above. All clinic charts and personnel were made available to this independent researcher, including billing records. All pertinent data, excluding patient identification, were recorded on separate forms and were analyzed at the University of North Carolina.

Results

Patient Characteristics

Table 1 presents the demographic data of both groups with respect to age, gravidity, race, marital and Medicaid status. The significant decrease in Medicaid eligibility in the D&E group represented a change of funding policy in 1980. The groups are otherwise comparable.

TABLE 1

Demographic Characteristics

	D&E		Saline	
	Average	Range	Average	Range
Age	21.46	13-40	20.27	15-40
Gravidity	1.42	0-10	1.0	0-4
% Black	55		56	
% Married	18		6	
% Medicaid	42		71	

Gestational Age at Termination

The actual gestational age of the fetus as determined by foot measurement is presented for the two groups in figure 1. The D&E group had 5 patients below 13 weeks and 12 patients above 16 weeks. The saline group (thought to be 16 weeks) had two patients below 16 weeks and 20 patients above 18 weeks, including 11 patients at 20 weeks, the upper legal limit. The range of clinical error is comparable in both groups.

Time Required for the Procedures

The D&E patients were operated on the same day they were seen in the clinic. After D&E, an average of 2.12 hours of recovery time was required before discharge. There were two patients who required further hospitalization.

The saline patients were seen twice in the clinic, the second visit for lab tests and instillation of saline. The average time from instillation to evacuation was 37.7 hours, requiring two days of hospitalization. Three patients remained hospitalized beyond three days.

Complications

Table 2 lists complications as defined by the Joint Program for the Study of Abortion (JPSA).[6] Hemorrhage was defined as a documented drop of hematocrit of 4 or more points. Failed abortion was defined as failure to expel a fetus within 48 hours of the first saline instillation. There was one major complication in the D&E group (one transfusion) and six major complications in the saline group (five transfusions, one grand mal seizure) ($p \leq 0.1$, not significant). There were three complications in the D&E group and 16 in the saline group ($p \leq 0.005$).

TABLE 2

Summary of Complications of Midtrimester Termination

	D&E	Saline
Major Complications		
Hemorrhage requiring transfusion	1	5
Seizure	0	1
(Subtotal) ($p \leq 0.1$, not significant)	(1)	(6)
Other complications		
Hemorrhage	1	0
Laceration requiring suture	1	0
Uterine perforation	0	0
Postoperative fever	0	0
Curetting for retained placenta	0	8
Failed abortion	0	2
Total	3	16
($p < 0.005$)		

Hospitalization

Two patients required hospitalization after D&E. A cervical laceration in one patient led to hemorrhage and admission to the hospital in which both transfusion and suturing were required for treatment. In the second patient, a hemorrhage led to hospitalization, during which time a hematocrit drop from 34.2 to 28.9 was noted, but no transfusion was performed.

Among the saline patients, three were hospitalized beyond the expected 3-day period. One patient underwent a grand mal seizure after saline induction and was observed on the intensive care unit after seizure. One patient required multiple transfusions after hemorrhage and had a prolonged recovery. One patient had a failed abortion, requiring D&C for retained products and had a prolonged recovery.

Financial Cost

The total cost for saline interruption was negotiated for Medicaid patients in 1980 to be $550. This included all room and board costs, operating room and transfusion as needed. Using the same guidelines, the cost of D&E care was negotiated to be $340, or 61.8% of the saline procedure.

Discussion

This study was undertaken to see if the conclusions arrived at in a controlled study in a university teaching hospital[7] were applicable in the setting of a private free-standing facility. The study of the first 100 midtrimester D&E patients performed introduced a bias against a favorable comparison to saline, since most complications occur early in the experience with a new surgical technique. In addition, the technique of direct dilation of the cervix with Pratt dilators to #59 (approximately 2 cm diameter) is potentially more liable to lead to significant cervical tears[12] than using laminaria,[13] though potential postoperative infection is reduced by choosing this method. Despite these biases, D&E patients had far fewer complications than saline patients, confirming observations of others[7, 11, 14] in this free-standing facility.

The cost to our medical care system in providing this service is of considerable concern in this era of cost-containment and decreasing hospital over-utilization. Reduction of the cost of hospitalization from two days to none by replacing intra-uterine instillation with out-patient surgical evacuation is self-evident; the similar incidence of subsequent hospitalization for complications in both groups, however, suggests strongly that we are not reducing dollar costs at the expense of increasing significant medical risks. This affirms the North Carolina Medical Care Commission's 1980 judgment in these important areas in permitting free-standing facilities to interrupt pregnancies up to 16 weeks gestation.

There are unmeasured psychic costs, however, which deserve comment. The patients' relief at not having to wait until the 16th week for a two-day hospital admission for painful uterine contractions and expulsion of the fetus in her bed is offset by the psychic trauma to physicians and their staff at having to physically evacuate recognizable fetal parts. Although this has also been commented on before,[7, 11] it is an important factor in a free-standing facility's choice of providing the services permitted them by the Medical Care Commission. The avoidance of this high psychic cost to a free-standing facility's staff will continue to be a factor in making this financially cost effective technique widely available in facilities providing first trimester abortion services.

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This month's cover reproduces three illustrations of a man in several stages of a long epileptic seizure that led to temporary exhaustion-paralysis. The seizure was one of many this patient experiences between March 25 and April 25, 1896. From William P. Spratling, *Epilepsy and Its Treatment*, Philadelphia, Saunders, 1904, page 256. Patricia Gibson, Associate Director of the Comprehensive Epilepsy Program at Bowman Gray School of Medicine, has written an article about that program and about epilepsy in general for our Features for Patients section this month.

SCIENTIFIC ARTICLE

Uninsured Pregnant Women of North Carolina: Whose Responsibility? A Private Practitioner's Viewpoint

Paul Williams, M.D.

I wish that I could tell you that I have the answers to all the financial problems of the uninsured pregnant woman of North Carolina. Unfortunately, I cannot and neither can anyone. As an obstetrician in private practice, I would like to share some observations with you.

The role of the obstetrician has undergone a tremendous change in the last 15-20 years. These changes were brought about not only by technological advancement within the specialty but also by increased expectations from our patients and their families. Many of our patients look to us as their primary care physician, which has broadened the scope of many of our practices. We find ourselves involved with sex education of teenagers, which at one time was left to the family unit and later attempted by many school systems, with only some success in a few areas. More often than not this education is provided at too late a date, which raises the emotional and financial cost.

To enable each of our patients to have only planned pregnancies with quality care should be the goal of every practicing obstetrician. This ideal situation should begin with a conference and physical exam prior to the patient becoming sexually active, or a premarital visit by the couple. Education about future possible pregnancies should be started at this initial exam with strong encouragement for a followup visit prior to conception of a planned pregnancy. Today, we know that quality prenatal care begins prior to conception. Screening for many disease processes and genetic inquiries can prevent later catastrophes. Throughout the prenatal period we are obligated to use all indicated procedures available to us for insuring a normal pregnancy. The number of tests, procedures, and amount of equipment required increases every year, as well as the expense.

The private practice of medicine today has become a business, and to survive it must be managed as a successful business. The physician in private practice is no longer guaranteed financial security merely by opening an office and practicing quality medicine. Even the AMA, through state societies, is now offering seminars to practicing physicians on the art of marketing, which would have been unheard of 10-15 years ago.

Items falling into the expense column of running a private practice have risen 100-700% in the last 10 years, whereas most obstetricians have only raised complete prenatal care, fee for services, about 50% during the same period of time. The total cost to the patient has risen much more when considering increased testing, procedures and consultations.

Is quality medical care a right or a privilege? This debate is more serious when applied to the uninsured pregnant woman than when considering who should get a transplant, life support equipment, etc., mainly because we are considering the fate of two lives. I do not feel that the majority of U.S. citizens really want to solve this debate, as has been tried by several countries with varying forms of so-called socialized medicine.

Is it fair to ask our insured patients who can afford this care to also pay for the uninsured patients? In many areas this is what is happening, particularly in community hospitals.

I would like to share with you our attempts to *improve* — not eliminate but just improve — this situation in Onslow County. A program with the hospital, private practice obstetricians, health department, and Department of Social Services was begun in 1978. The Department of Social Services certified that the mother did *not* have third-party eligibility and that the income was less than 65% of the Medicaid level. Initial physician exam was then performed by the Health Department, to satisfy the Department of Social Services guidelines, after which the patient was followed by an obstetrician of her choice. Initially, all delivering obstetricians participated; for various reasons, however, after several months we were down to one-half. We arbitrarily selected $400 as the fee, to be divided $225 to the hospital, $150 to the obstetrician, $25 to the pediatrician. Later an additional $20 was allotted to the hospital for outpatient laboratory screening. For lack of a name it became the "420" program. Most of the patients benefited from $350 provided by a special Maternal Child Health grant from the state through the Health Department, but still many were unable to supply the additional $70. Disputes over eligibility, lack of controls, frustration over need for additional testing, lack of cooperation between agencies, and disenchantment by the hospital governing body spelled doom for the program. A temporary stay was then tried by increasing the fees on a sliding scale; however, this obviously did not produce more funds.

So, several meetings were held and lo and behold! A gift horse came along in the form of a "high-risk" clinic under

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From the Crist Clinic, 200 Memorial Drive, Jacksonville, NC 28540.

the administration of the state regional perinatal program. The hospital governing board was very skeptical, particularly about inviting participation in the program from several surrounding counties. Only a few physicians this time around made plans to participate in the program. Many regulations and guidelines had to be worked out in order to qualify under the state program. Several pats on the back, and suddenly we were accepted for a grant in excess of $75,000 for a projected 175 patients over a one-year period. A delay in starting the program was caused for several months over the hiring of an appropriate health educator. After dividing much of the money amongst salaries for existing workers, hiring new workers, buying desks, tables and other equipment, we ended up with a much more complex "420" program. Mistrust and bickering forced an end to the program.

Then we were back to more meetings which have produced what I will call Local Level Prenatal Program III. All obstetricians in the community are participating. The hospital will work with the Health Department to screen patients for eligibility. Patients will be examined and followed by appropriate nurse practitioners at the Health Department with backup provided by the obstetrician on call for that day. Laboratory testing, prenatal education, and procedures will be arranged through the Health Department. Delivery of the patients will be by the obstetrician on call the day the patient presents at the hospital in labor. The Health Department will supply $350/patient to the hospital as long as MCH funds exist; this in turn is divided between the hospital, obstetrician, and pediatrician as in the "420" program. Each may, however, in turn bill the patient for additional funds if felt appropriate, such as in cases of complications or extended hospital stay. Everyone involved feels these bills will be fruitless. Obviously this arrangement will in no way completely cover the expense of taking care of the uninsured pregnant woman who has little or no financial resources. We have now run out of programs, and I hope we will stay with plan III until someone comes up with a better method of funding. For truly indigent patients, I feel sure that physicians and hospitals would gladly settle for coverage of cost without profit.

This is not meant to belittle our much needed state-wide regional perinatal program; just the contrary. I hope we have shown how programs of this magnitude need individualizing to the needs of each local community.

The responsibility for the uninsured pregnant woman in North Carolina is everyone's. There must be cooperation at all levels within the state and particular attention paid to the various problems that exist at the local level.

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LEGISLATIVE REPORT

Anatomy of a Bill

Susan R. Valauri

THE North Carolina General Assembly adjourned on July 22, 1983, ending the longest continuous session in the history of the state. The North Carolina Medical Society had a successful legislative program, having many bills amended, opposing and supporting others. A complete summary of those bills will be mailed in September.

Although nearly everyone took civics in high school and many others studied some political science in college, neither taught us how a bill really becomes law. The chronicle of the Midwifery bill in this year's General Assembly reveals the subtle and not-so-subtle events that led to its ratification.

The following account of the bill's passage is told by a Medical Society lobbyist who was on the scene during consideration of the bill. Keep in mind that this account is made from her perspective.

Background

The story began in 1981. A resolution passed by the 1981 General Assembly directed the Department of Human Resources (DHR) to study "the safety and efficacy of out-of-hospital delivery, and to examine the State's role in licensing or otherwise permitting the activities of birth attendants functioning in the non-hospital setting." The DHR assembled a committee of physicians, nurses, consumers, midwives, and interested citizens to carry out the objectives of that resolution. Those meetings are a story in themselves.

The *Report on Midwifery of the Department of Human Resources to the North Carolina General Assembly* was the final product of the Midwifery Study Committee hearings. It contained two administrative models for midwifery regulations; both models shared the basic assumption that midwifery is an acceptable method of delivering babies, and that midwifery services are in demand. (Two physicians serving on the Study Committee filed a minority report expressing their opposition to the Committee's recommendations.)

The model preferred by the Midwifery Study Committee assigned the authority to regulate midwifery to a newly created Midwifery Board whose members would include obstetricians, midwives, and consumers. Midwifery was defined as health care activities performed to assist pregnant or delivering women and newborn infants. And the relationship between the midwife and her backup physician was clearly defined as a *collaborative* and *interdependent* practice. This model would have allowed midwifery practice by both registered nurses and lay midwives in any setting selected by the prospective parents.

The second model differed in only one respect: the authority to regulate midwifery was assigned to the existing Joint Subcommittee of the Boards of Medical Examiners and of Nursing with a defined subcommittee of that group given authority to develop midwifery regulations. The Joint Subcommittee was originally created to certify all Nurse Practitioners, including nurse midwives.

Legislative History

A bill was drafted by the DHR incorporating many of these recommendations. Rep. George Miller (D-Durham) was asked to introduce the legislation during the 1983 General Assembly.

The North Carolina Medical Society had a keen interest in the legislation and voiced concern both to DHR and to Rep. Miller. The Medical Society's position on the proposed legislation was developed by its Committee on Legislation with input from the Committee on Maternal & Child Health. The basic position was drawn from previous stands taken by the House of Delegates.

One of the state's specialty societies — the North Carolina Chapter of the American College of Obstetricians and Gynecologists — asked the Medical Society to help present its viewpoint to members of the General Assembly. Opinions and assistance were freely shared between these groups.

On April 14, well into the legislative session, Rep. Miller introduced House Bill 814, simply entitled: Midwifery. Elaborate definitions of "interconceptional care," "intrapartum care," "newborn care," "postpartum care," and "prenatal care" described the practice of midwifery. For example, intrapartum care included: (a) attending women in uncomplicated labor; (b) assisting with spontaneous delivery of infants in vertex presentation from 37 to 42 weeks gestation; (c) performing amniotomy; (d) administering local anesthesia; (e) performing episiotomy and repair; and (f) repairing lacerations associated with childbirth. Basically these definitions were window dressing; certified nurse midwives approved by the Joint Subcommittee of the Boards of Medical Examiners and of Nursing were already legally performing these acts under regulations adopted by the Joint Subcommittee.

Under H. 814, anyone approved to practice midwifery could do so in a hospital or non-hospital setting. The bill created a Joint Midwifery Committee to administer the Act. And, other than grandfathering two granny midwives, the act eliminated the practice of lay midwifery.

The first public forum on H. 814 occurred May 4. Appearing in support of the bill were Dr. Sarah Morrow (Secretary of DHR), certified nurse midwives, the Nursing Association, a pediatrician who related her own experience

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From the Department of Governmental Affairs, North Carolina Medical Society, P.O. Box 27167, Raleigh 27611.

with home delivery attended by a midwife, and about 10 others including obstetricians who offered support for most of the bill but opposed the creation of a new board.

Curiously, the Medical Society and a representative from the North Carolina Pediatric Society found themselves in the Against column along with lay midwife advocates. The Medical Society, represented by Dr. Edna Hoffman for the Committee on Legislation, objected to the separate board and spoke against home delivery. The Society applauded the recognition of certified nurse midwives and the abolition of lay midwifery. Three mothers and one obstetrical nurse gave personal testimony about the horrors of unexpected complications in delivery. These women offered living proof that home delivery and untrained birth attendants could result in personal tragedy.

The public hearing lasted approximately two-and-a-half hours. Various members of the House State Government Committee were on hand to listen to opposing viewpoints, and television crews and newspaper reporters were there to record the day's events — even including nursing mothers and infants in the back row.

The bill was next considered by a legislative committee on June 13. In the meantime, we at the Medical Society had reported the bill to our key contact physicians on six separate occasions as part of our weekly "Legislative Update." And, on the day the bill was introduced, a "Legislative Alert" was mailed to all obstetrician/gynecologists, pediatricians and key contacts. The alert outlined the bill and the Medical Society's objections. The contacts were asked to convey those concerns to their legislators.

Society lobbyists approached the bill's sponsor, DHR, and the members of the appointed subcommittee to explain problems and, we hoped, find solutions to those problems.

It is probably safe to assume that the North Carolina Nursing Association and other proponents of the bill were in contact with their members during the same time period.

At the June 13 subcommittee meeting, Chairwoman Jeanne Fenner (D-Wilson) presented a proposed substitute bill to other members of the subcommittee. Representatives of the Nursing Association, the North Carolina Chapter of the American College of Nurse Midwives, and midwifery consumers had worked with Rep. Fenner to develop new legislation that would (1) permit non-nurses to practice midwifery, (2) redefine the relationship between midwives and physicians as "collaborative management" rather than supervision as specified in the original bill, and (3) change the composition of the proposed Joint Midwifery Committee from 3 physicians, 3 nurses, one public member to 4 nurses, 2 physicians and one public member. There were other substantive changes from the original bill, but these three were major.

Chairwoman Fenner held off further consideration of the proposed substitute to allow subcommittee members, the Director of Public Health, the bill's sponsor, the Medical Society, and other interested parties time to study the new legislation.

The next meeting was taken up with debate from various groups. Then, after two failed attempts to meet, a final subcommittee meeting occurred. Rep. Fenner's bill was not considered; instead, Rep. Miller brought back his bill. The original version was amended by the subcommittee and given a favorable report. The thrust of the amendments was to delete all references to midwives being "under the supervision of a physician" substituting the phrase "in collaboration."

The subcommittee substitute was presented to the full State Government Committee. At that time, Rep B. Holt (D-Alamance) brought forth a different bill and proposed that it be adopted as a committee substitute. From the viewpoint of the Medical Society, this bill was a major improvement. It made the following changes: (1) it deleted "routine health maintenance during the reproductive years" from the definition of interconceptional care; (2) the administration of the Act was returned to the Joint Subcommittee of the Board of Medical Examiners and the Board of Nursing, but for the purposes of approving midwives, the Joint Subcommittee would be autonomous; (3) the relationship between physicians and midwives would be supervisory rather than collaborative.

There was a lot of confusion at this committee meeting. A vote on H. 814 was postponed for a week.

At the next meeting, Rep. Miller brought forth yet another version of H. 814 for consideration by the committee. This draft was similar to the one proposed by Rep. Holt. It enlarged the Joint Subcommittee by four members for the purposes of reviewing midwife applicants (two obstetricians who have had working experience with midwives and two certified midwives); it also stated explicitly that "actions of the joint subcommittee pursuant to this article shall not require approval by the Boards of Medical Examiners and of Nursing."

This bill was given a favorable report by the House State Government Committee along with a recommendation that the bill go to the House Finance Committee. Although the bill was a considerable improvement, the Medical Society remained firm in its opposition to the creation of a separate "board" for nurse midwives.

Based on projections provided by the Board of Medical Examiners, the proposed joint subcommittee could not stand alone financially; income generated by midwife applicants would not be enough to cover the costs of running the subcommittee at those times when midwife applicants were considered for approval. Furthermore, the autonomy of the Joint Subcommittee was a clear and significant change in health policy in this state. Since ancillary providers (nurse practitioners, physician's assistants) have been given statutory authority to perform limited medical acts, approval on an individual basis has historically been subject to review by the Board of Medical Examiners. This Board is charged with the responsibility of ensuring quality medical care and ethical providers for residents of this state.

The Medical Society continued to lobby against this provision of the bill on the House floor, and in meetings of the House Finance Committee, the Senate Special Ways & Means Committee, and the Senate Finance Committee. We came very close to having the bill amended on the House floor. Rep. Bill Grimsley (D-Guilford) offered an amendment which would have placed the joint subcommittee back under the authority of the Boards of Medical Examiners and of Nursing. Rep. Miller moved to table the Grimsley amendment, and the tabling motion passed by a margin of

Chronology of Midwifery Bill

Thurs. April 14	H. 814 introduced, referred to House State Government Committee.
Weds. May 4	Public Hearing held in Legislative Auditorium.
Weds. May 11	H. 814 brought up in committee briefly. Chairman said subcommittee would be appointed.
Tues. May 17	Subcommittee appointed.
Mon. June 13	1st Subcommittee meeting. Chairman Fenner handed out proposed committee substitute.
Thurs. June 16	Subcommittee heard testimony from interest groups on proposed committee substitute.
Mon. June 20	Subcommittee meeting scheduled, then cancelled.
Tues. June 21	Subcommittee meeting scheduled, but can't get a quorum. Meeting cancelled.
Thurs. June 23	Subcommittee meeting scheduled after General Session. Chrmn. Fenner absent; State Government Chairman Church presides. Proposed committee substitute discarded; original bill reconsidered and amended. Subcommittee gives H. 814 a favorable report as amended.
Tues. June 28	Subcommittee substitute reported to full State Government Committee. Rep. Holt offers a committee substitute. No action taken on either version of H. 814.
Tues. July 5	Rep. Miller presents new substitute for H. 814. Previous versions discarded. H. 814 receives a favorable report from the committee with a recommendation that it go to House Finance Committee.
Thurs. July 7	H. 814 considered by House Finance Committee and receives a favorable report. (This action is discovered to be improper, because the bill is technically in the State Government Committee.)
Fri. July 8	Committee substitute for H. 814 is reported on the House Floor. H. 814 is re-referred to the Finance Committee.
Tues. July 12	House Finance considers H. 814. It receives a favorable report and is reported on the House floor the same day. H. 814 passes 2nd reading 69-25 with an amendment added.
Weds. July 13	H. 814 on House calendar for third reading. Rep. Grimsley offers amendment supported by the Medical Society. Rep. Miller moves to table Grimsley's amendment. Tabling motion passes on a recorded vote of 55 to 52. H. 814 then passes 3rd reading.
Thurs. July 14	H. 814 is received in the Senate where it is referred to the Senate Special Ways & Means Committee. Senate recesses and Special Ways & Means considers H. 814. The bill is amended and reported favorably on the Senate floor with a recommendation that it be sent to Senate Finance Committee. H. 814 is re-referred to Senate Finance.
Fri. July 15	Senate Finance meets and postpones consideration of H. 814 until the following Tuesday.
Tues. July 19	Senate Finance considers H. 814. Sen. Plyler seeks to amend H. 814 and is defeated on a voice vote. H. 814 is given a favorable report and reported back to the Senate Floor. The bill passes 2nd reading 33 to 4.
Weds. July 20	H. 814 passes 3rd reading in the Senate and is sent by special messenger to the House for concurrence in the Senate amendment. The House concurs on a voice vote.
Thurs. July 21	H. 814 is ratified.

55-52. The Senate Special Ways & Means Committee did not consider the merits of the bill, but referred it to the Senate Finance Committee. Sen. Aaron Plyler (D-Union) offered the Grimsley amendment in Senate Finance committee where it was narrowly defeated on a voice vote.

Why Did We Fail to Have the Amendment Adopted?

Throughout this process, we called upon many of you to assist us by contacting your legislators. A number of you responded and we are most appreciative of your efforts. With such a good effort, why did we fail in our attempts to have the bill amended?

In the 20/20 vision of hindsight, a number of reasons emerge. The first one is intangible — perception. Those legislators familiar with the history of H. 814 — those most interested in the bill — felt that the Medical Society had already won a number of major concessions: (1) the Joint Subcommittee (although enlarged by four members) was charged with oversight and approval of midwifery applicants, not the "Midwifery Advisory Committee" as originally proposed; (2) the composition of the Joint Subcommittee was balanced — 5 MDs and 5 nurses; (3) routine health care was eliminated from the definition section of the bill — a definition which we said constituted the practice of medicine; (4) contrary to study committee recommendations and intense lobbying from special interest groups, physicians maintained a "supervisory" relationship with midwives rather than a "collaborative" one. A newspaper account of the midwifery legislation carried statewide by UPI and the Raleigh *News and Observer* added fuel to the perception that we had "won." In essence, the article stated that the Medical Society and the DHR had joined forces and drafted a substitute bill. Although this information was inaccurate, there was no way to undo the perception of those people who had read the story.

By continuing to oppose the legislation after prevailing on a number of points, many legislators felt we were splitting hairs. Their attitude was that we should have been happy with the compromises that had been made and left the rest of it alone. Our philosophical objection to the autonomy of the Joint Subcommittee was not easily understood by members of the General Assembly. In fact, those in opposition to our position were driving home the point that the Medical Society only wanted control. This concept had great appeal and, unfortunately, it became the accepted view.

The grassroots lobbying effort of the N.C. Nursing Association cannot be discounted. The nurses had pushed for two major pieces of legislation earlier in the session, Direct Third Party Reimbursement for some nurses, and the Hospital Recodification Act (in particular the section dealing with the granting of hospital staff privileges). Though they were unsuccessful with those two initiatives, their two lobbyists showed formidable effectiveness and determination. We underestimated the ability of the N.C. Nursing Association to mobilize RNs across the state. In spite of the fact that H. 814 would only affect 23 nurses directly, the Nursing Association united behind these nurse midwives. There were many occasions when we found ourselves visiting legislative offices only to be interrupted by a telephone call from a nurse urging passage of 814 without amendments. In fact, many Senators confirmed the fact that they were receiving anywhere from 10-15 telephone calls a day from nurses. In addition, the President-Elect of the Nursing Association became a regular fixture at the Legislative building toward the end of the legislative session.

A third factor contributing to our failure was that there was no clear mandate from physicians across the state.

Dr. Sarah Morrow personally crusaded for passage of H. 814. We understand that Dr. Morrow sent letters to all members on the House floor when the bill was being debated. Members of the Senate told us that Dr. Morrow telephoned asking them to support the bill without amendments. Sen. Conrad Duncan (Co-Chairman of the Senate Finance committee) read a letter from Dr. Morrow to members of the Senate Finance committee opposing the Medical Society amendment and supporting the bill.

A physician from High Point wrote a scathing letter criticizing the Board of Medical Examiners and urging adoption of 814 without amendments: " . . . The Board of Medical Examiners has historically been antagonistic and hostile to the concept of nurse midwives . . . they have shown absolutely no outward interest in further understanding of the concept. . . . The provision in Senate (sic) Bill 814 which establishes a separate committee composed of M.D.s, nurse-midwives, and consumers would have a more informed and balanced viewpoint on this subject."

Those are just two instances where we observed first-hand MD opposition to the Medical Society's position. There were, we were told by legislators, many other physicians who telephoned their representatives to oppose the Medical Society's position on H. 814.

Lobbying is, of course, just one facet of the legislative process. Enacting legislation is complex and involves many people and events. We haven't even touched on the importance of the bill's sponsor, for instance. What if this legislation had been referred to a Health Committee instead of State Government? Rep. Grimsley's amendment only lost by two votes — if someone other than a freshman legislator (who happens to be an MD) had moved the adoption of the amendment, would the outcome have been different? The bill might have been entirely different if it had moved early in the session, or if it had begun as a Senate bill.

One point in evaluating our legislative successes and failures is to reassess our legislative goals. We must constantly monitor and revise our positions to reflect current thinking and state of the art medical practice.

The entire health care field is under the scrutiny of the Federal Government, state government, business, and the general public. Physicians can't afford to sit idly by while legislators and other government officials decide the future of health care delivery and medical practice.

Just this year the North Carolina General Assembly authorized several studies in the area of health care. A bill was passed to establish the Medical Cost Commission. The Legislative Research Commission has been directed to study and report on "Health Professionals" and "Public Health Facility Laws and Certificate of Need Procedures." These topics will unquestionably lay the groundwork for new legislation in the next session of the General Assembly.

If we wait for legislation to be introduced, it will be too late. It's important to become politically attuned — know your legislators and know the issues. As a Society we must look ahead and plan for the future. We need to formulate positive policies and seek their implementation — otherwise we'll find ourselves without a voice.

In an effort to encourage physician involvement in the political process, the MEDPAC Board of Directors has scheduled a 1½ day seminar for October 27-28, 1983 in Asheville, N.C.

The seminar is designed to explore how our state and federal legislative process works and to point out how *you* can personally influence and participate in that process. You will hear up-to-the-minute reports about key health care issues before the North Carolina Legislature and the U.S. Congress. And you will experience first-hand the excitement and hard decisions that go into a candidate's campaign.

Seminar speakers will include representatives from AMPAC, the AMA, and North Carolina's MEDPAC. The Washington-based public affairs consulting firm of Michael E. Dunn & Associates, Inc., will assist in the presentation of the seminar. The seminar includes audiovisual materials that are both entertaining and informative, special outside speakers, and a political campaign simulation. As a participant, you will receive a seminar handbook and resource guide to practical politics.

You *can* help elect the candidates of your choice. You *can* develop personal, constituent relationships with your law-makers. And you *can* have your voice heard in the public policymaking process. But first, you have to know how.

Please complete and mail the registration form which accompanies this article. To ensure that you will get the full benefits of participation, attendance will be limited. We hope you and your spouse will take advantage of this unique opportunity and will return your registration form today.

POLITICAL EDUCATION SEMINAR

AMPAC and North Carolina MEDPAC-State and Federal are pleased to invite you and your spouse to attend a Political Education Seminar.

Date: October 27-28, 1983
Location: The Grove Park Inn
City: Asheville, N.C.

Program in Brief

Day One — Thursday, October 27

12:45 pm	Registration
1:15 pm	Welcome/Introductions
1:45 pm	The Emerging Politics of the Eighties
2:15 pm	Dynamics of the Legislative Process
3:30 pm	The View From Inside
4:00 pm	The "Why" of Political Involvement — Key Issues
4:45 pm	The Citizen's Role in Legislative Policymaking
5:30 pm	Recess
6:00 pm	Reception hosted by MEDPAC at the Governor's Western Residence

Day Two — Friday, October 28

9:00 am	Coffee
9:15 am	The Role of PACs in American Politics
10:00 am	The Political Campaign — An Overview
11:00 am	Volunteer Management — The Role of Campaign Volunteers
12:00 pm	Lunch Hosted by MEDPAC Topic: Practicing Medicine and Politics
1:30 pm	See How They Run — A Campaign Management Situation
5:30 pm	Adjournment

Hurry. Seminar attendance is limited. Make your reservations as soon as possible.

(clip and mail)

Registration Form

Date: October 27-28, 1983
Location: Grove Park Inn
City: Asheville, N.C.

UNT ME IN! I'm ready to find out how to become a
re effective participant in the political process.

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me ______________________________

dress ______________________________

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, State, Zip ______________________________

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ephone ______________________________

☐ The following members of my family will also.

Name: ______________________________

____

☐ I (We) cannot attend but would be interested in future political education seminars.

Mail registration to: Ms. Jean Lewis
MEDPAC
P.O. Box 25834
Raleigh, N.C. 27611

A block of rooms has been reserved for Political Education Seminar participants. If room accommodations are needed, please make your reservations directly with the hotel: (704) 252-2711. Be sure to tell them you are with the AMPAC Political Education Seminar.

TOXIC ENCOUNTERS

Some Light on the Charge Brigade — Disc Battery Ingestion

Ronald B. Mack, M.D.

Americans seem to have a penchant for miniaturizing many of their technological developments. This Lilliputian approach seems to be aimed at making their adult toys more portable and thereby more instantly available. Many of these pleasurable/utilitarian machines require miniature energy sources and this has resulted in the widespread availability of the so-called disc battery (AKA button or miniature batteries).

These little suckers are used to power the thousands of calculators, hearing aids, watches, computers and games that utilize miniature electronics, and they are potentially very dangerous if swallowed. They are not just another foreign body. The incidence of ingestion of these batteries has increased remarkably in the past few years and the projection for the future is equally dire. Why all this fuss about such small innocuous-appearing objects? The answer lies in the size and composition of the batteries. Although these batteries differ in composition depending on the manufacturer, the typical miniature mercuric oxide battery consists of a depolarizing mercuric oxide cathode (+) and a pure amalgamated zinc anode (−) and are joined by a plastic seal. The inside has such "goodies" as 40-45% potassium hydroxide. The cathode and the anode are immersed into the electrolyte "bath" (e.g., potassium hydroxide) within the cell. The electrolytes conduct the electricity as the charged oxygen atoms leave the cathode and go to the anode. Metals used for the anode have a higher affinity for oxygen than the metal of the cathode. Think of a power cell as being composed of heavy metals and alkali basically.

Button or disc battery size varies from 0.5 cm in diameter (slightly smaller than the button on the collar of a button-down men's shirt) to 2.5 cm in diameter (about the diameter of a U.S. quarter) and weigh 1 to 5 grams. There are about 100± types of disc batteries currently (a pun) available but there are many different cathode/anode metal combinations, e.g., zinc, manganese, nickel, cadmium, lithium, silver, and mercury, etc. So far, mercury is the only heavy metal in this group that is a potential toxin; can be 50% by weight. The alkali composing the electrolyte solution can be 1 to 12% of the weight of the battery and is usually 26 to 45% sodium or potassium hydroxide.

Just by looking at the ingredients of these "beasties," the potential for trouble subsequent to ingestion seems high indeed. High on the list of problems if you attempt to eat these inedibles are: (1) perforation of a portion of the GI tract from pressure necrosis or liquifaction necrosis from the alkali, (2) obstruction of a section of the lumen of the GI tract due to the foreign body, and (3) heavy metal toxicity. By the way, apparently if you have a Meckel's diverticulum you must never swallow a disc battery. There are several cases in the recent literature of perforation of a Meckel's diverticulum by a small battery lodged in the diverticulum. Some authorities have speculated that an electrical injury can also occur in the GI tract when the swallowed battery is immersed in the quite rich electrolyte fluid medium in the gut and an electrical current flows between the cathode and anode.

Now that we know what these tiny troublemakers are composed of, what are you supposed to do when you get a phone call or beeper call or whatever call that a patient swallowed one? As the current expression states, "the jury is still out" on the best procedure to follow. Recent recommendations have ranged from very aggressive — "cut'em open from gullet to ----" — to conservative "leave 'em alone, he'll grow out of it." Neither extreme is the best answer here. Certainly, just as I am not just another pretty face, this is not just another swallowed foreign body problem. Although you will ultimately have to make up your own mind based on the conflicting literature, here are some thoughts regarding management that you can ponder:

(1) *Do not* administer ipecac to induce vomiting in this situation; could cause aspiration into the pulmonary tree and it probably won't work anyway. The same is probably true of gastric lavage.

(2) *Do obtain an X-ray* from the area of the nasopharynx to the anus; the battery is usually radiopaque. Lateral views may be helpful.

(3) *Do remove the battery if it is lodged in the esophagus.* There are several methods of accomplishing this, e.g., (a) *endoscopy* with or without a magnet (better call your endoscopist for this) or (b) *Foley catheter* removal. In this procedure, preferred by many radiologists, a Foley catheter is inserted into the esophagus past the battery. The balloon at the tip of the catheter is then inflated with a water-soluble contrast material and the catheter is withdrawn, hopefully withdrawing the battery with it. The patient should be placed head-down, feet-up on a flouroscopy table. It must be stressed that if the battery is in the esophagus it should be removed one hour ago!!! Watchful waiting, tincture of time, etc. is not indicated here as the stakes are too high.

(4) *Do stop and reflect* if the battery is *beyond the esophagus*. Although most of the current experts agree that

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From the Department of Pediatrics, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC 27103.

esophageal removal is a must, there is considerable disagreement about what to do if the battery is further along in the GI tract. If the patient is symptomatic then, of course, you need surgical consultation at least. The vast majority of patients, however, have no symptoms or signs at this stage; perforation and peritonitis are quite rare once the esophagus has been traversed. It seems to me, based on the current literature, that a conservative approach is indicated in an asymptomatic patient with a disc battery located in the GI tract past the esophagus. Ninety percent of foreign bodies traverse the entire GI tract in 4 to 7 days and the remaining 10% can take as long as a month to make the long trek to daylight. Therefore, if the X-ray reveals a disc battery past the esophagus in an asymptomatic patient you might advise the following: (a) have the parents check all of the patient's stools for blood or battery or whatever; (b) it is probably alright to give a saline cathartic such as magnesium sulfate or sodium citrate at least one time to hasten transit; (c) repeat the X-ray in 7 days if the battery has not passed. If the battery is still present on X-ray, you can administer another cathartic and/or give a gastrograffin enema diluted 50% with water (under fluroscopic observation) to help coax it out; (d) antacids and cimetidine probably are of no value here; (e) although the risk of heavy metal poisoning seems to be small, heavy metal blood and urine levels should be obtained, especially if mercury is involved. Mercuric oxide, although a corrosive substance, is poorly soluble and poorly absorbed. Furthermore, it is alleged that as the battery cells discharge the toxic mercuric oxide is converted into almost non-toxic elemental mercury.

When I want something small, powerful, and portable, I will take my three-year-old grandson every time.

LEARNING WITHOUT WORK

The Continuous Vision Lens

Samuel D. McPherson, Jr., M.D.

ONE of the normal changes that occurs with all middle age humans is the loss of the ability to accommodate one's vision from distance to near. When one passes fifty years of age, this inability to change the point of focus becomes quite acute, and bifocal or trifocal lenses are required. Bifocal lenses were first described by Benjamin Franklin in the eighteenth century, and until recent years, little improvement had been made in this type of spectacle.[1] Fifteen years ago, the French introduced a lens called "Varilux" which enabled one to see not only at 14 inches and infinity but at varying points in between. The lens was made by incorporating varying focal points into an aspheric lens. Since then, at least three generations of these continuous vision lenses have been introduced, and each one represented an improvement. Most of the initial problems were due to peripheral distortion and a very small keyhole-like reading segment. The present lenses have overcome the majority of these problems. I have worn this type of lens for the past fifteen years and have found it to be an invaluable asset in the day-to-day practice of medicine. Such lenses, available at most optical shops, do require some expertise in fitting to the proper centration and height. Once properly fitted, they may require two to three weeks of adjustment for complete comfort. However, when one becomes adapted to these, there is seldom any desire to return to bifocal or trifocal lenses, and for some, the absence of tell tale lines may partly disguise the aging process.

From McPherson Hospital, 1110 W. Main Street, Durham, NC 27701.

Reference

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LEARNING WITHOUT WORK

Distended Neck Veins

J. Randall Moorman, M.D. and G. Ralph Corey, M.D.

> "The jugular venous pulse . . . it is hard to conceive of any physical sign that is more informative."
>
> Paul Wood[1]

DISORDERS of the heart and pericardium may increase right atrial pressure, and this is manifested by an increase in the height of the jugular venous pulse. In this setting, analysis of the wave form may lend important information concerning the etiology of a patient's cardiorespiratory complaints and, in addition, bring about early diagnosis of cardiac tamponade, a potentially lethal disorder.

Case History

An 80-year-old gentleman was admitted because of edema and dyspnea of two months duration. In 1960 he had suffered burning precordial pain and fever, and was told that he had pericarditis. There was no cardiovascular limitation over the next 20 years. In 1982 he was hospitalized for evaluation of a multinodular goiter. Bilateral pedal edema was noted, and he was treated with diuretics. He continued to feel well.

Two months prior to admission, he noted increasing leg edema and progressive dyspnea on exertion. There was no orthopnea, paroxysmal nocturnal dyspnea, chest pain, cough, or hemoptysis. He was admitted for further evaluation. His medications at the time of admission were Digoxin, Lasix, and Synthroid.

Physical examination revealed a healthy man without distress. The heart rate was 76 and irregularly irregular. The blood pressure was 170/90 without discernible paradox. The neck veins were distended to the angle of the jaw while he was sitting erect, and collapsed remarkably at the time of carotid upstroke and again shortly thereafter. The precordium was quiet. The first heart sound was variable in intensity. The second heart sound was physiologically split. There was a loud, crisp sound in early diastole at the apex. There was no rub or murmur. The lungs were clear. There was anasarca.

The electrocardiogram and chest x-ray are pictured (figures 1 and 2). An echocardiogram showed normal chamber sizes, wall thickness, and contractility. There was no pericardial effusion.

Cardiac catheterization showed an end-diastolic pressure of 16 mm Hg in the right atrium, right ventricle, pulmonary artery, and left ventricle. The x and y descents within the right atrium were very pronounced, and there was a dip-plateau pattern to the right ventricular tracing. An endomyocardial biopsy was performed, but no amyloid was found.

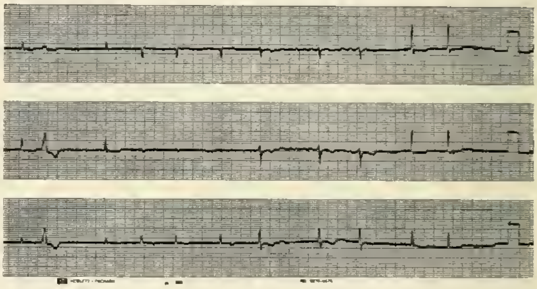

Figure 1. The ECG shows atrial fibrillation, low QRS voltage, and digitalis effect.

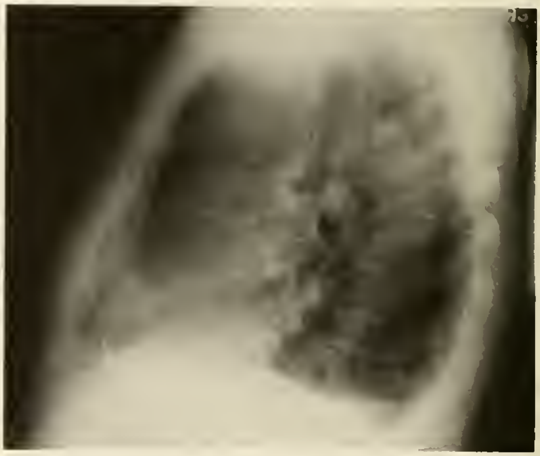

Figure 2. The x-ray shows calcification along the inferior heart border.

He was felt to have constrictive pericarditis, and pericardiectomy was performed. At surgery, the pericardium was found to be extremely thick and calcified. The underlying myocardium appeared normal. Postoperatively, his end-diastolic pressures dropped to 10 mm Hg, and he diuresed 20 pounds. He was discharged free of symptoms and edema.

Discussion

In the evaluation of patients with cardiorespiratory symptoms, the height and character of the jugular venous

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From the Department of Medicine, Duke University Medical Center, Durham, NC 27710.

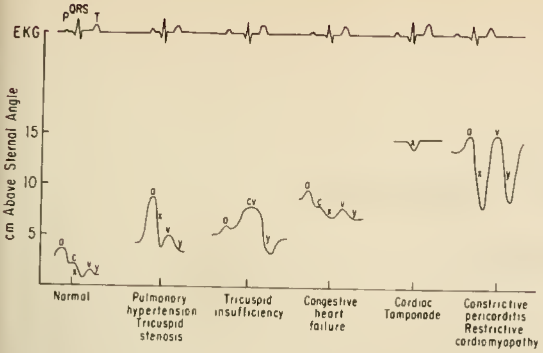

Figure 3. Idealized neck vein waveforms and pressures.

pulse are extremely important.[1-3] The venous pulse normally rises 2 to 3 cm above the angle of Louis during expiration, and falls during inspiration. The most prominent features normally are the x and y descents (figure 3). The x descent represents atrial diastole, coincides with the carotid upstroke, and is the more prominent. The y descent represents early filling in ventricular diastole, and follows the carotid upstroke. Atrial systole is represented by the a wave, which precedes the carotid upstroke. Venous return during systole (which closes the tricuspid valve) causes the slow upward surge in the venous pulse known as the v wave. When the height of the venous pulse is elevated, the wave form must be closely analyzed. Each of the differential diagnoses of elevated venous pressure has a characteristic wave form (figure 3), and each carries a different prognostic and therapeutic impact.

The most life-threatening condition causing increased jugular venous pressure is cardiac tamponade. A surplus of pericardial fluid raises the intra-pericardial pressure, causing two hemodynamic events which can be noted at the bedside. The first is the increased jugular venous pressure, with a characteristic wave form consisting of a prominent x and almost absent y descent. The second results from variable ventricular filling during phases of respiration, and causes the so-called "paradoxical" pulse.[4, 5] This is clinically manifest as a fall in the systolic blood pressure during inspiration, and may be present in an amount of up to 10 mm Hg in normal people. We recommend that the physician, having observed increased jugular venous pressure, immediately and carefully search for a "paradoxical" pulse, especially if the jugular wave form is characteristic of cardiac tamponade. If the "paradoxical" pulse is greater than 12 to 15 mm Hg, then the patient should be assumed to have cardiac tamponade until proven otherwise. If, in addition, low cardiac output is clinically suggested by hypotension, confusion, or poor skin perfusion, then fluid therapy should be instituted. An echocardiogram should be rapidly obtained to determine the presence and amount of pericardial fluid. If a large effusion and significant cardiac compromise are found, then a pericardiocentesis should be immediately carried out. The most frequent causes of tamponade currently are metastatic malignancy, idiopathic pericarditis, and uremia.

If cardiac tamponade is not present, then a more leisurely evaluation of the character of jugular venous pulse may be pursued. A prominent systolic wave suggests tricuspid regurgitation, and the next point of examination should be auscultation for the characteristic holosystolic murmur along the left sternal border, increasing with respiration (Carvallo's sign).

There are two conditions in which the a wave is greatly accentuated, and they may be distinguished from one another by other points of the cardiac exam. The first condition is tricuspid stenosis, in which case the precordium and P_2 are quiet. The other is non-compliance of the right ventricle during atrial systole, as seen in pulmonary hypertension and pulmonary stenosis. Here, a right ventricular lift and accentuated, and perhaps palpable, P_2 are present.

The observation in our patient of very prominent x and y descents limited the differential diagnosis to constrictive pericarditis and restrictive cardiomyopathy. These two disorders, although producing identical disruption of right atrial hemodynamics, are vastly different in etiology and, more importantly, in therapy.[6, 7] Constrictive pericarditis implies a normal myocardium, the filling of which is impaired by the presence of a thick and unyielding pericardial prison. Restrictive cardiomyopathy, on the other hand, denotes infiltrative cardiac disease of such extent that the walls are unable to relax after systole and accept diastolic filling. Infiltrative cardiac disorders are irreversible and are usually caused by amyloidosis or hemochromatosis. Constrictive pericarditis, however, may be totally alleviated by adequate pericardiectomy. Differentiation of these two disorders may require thoracotomy and direct visual observation of the pericardium and myocardium, though hints may be obtained by other methods such as chest x-ray, echocardiogram, cardiac catheterization and endomyocardial biopsy.

Acknowledgment

The authors wish to thank Dr. Robert Waugh for his review of the manuscript and helpful advice.

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LEARNING WITHOUT WORK

Do No Harm: A Prescription Filled With Difficulty! A Thorium-Induced Neoplasm

R. B. Merlo, M.D., W. W. Faulk, Jr., M.D., and C. C. Dudley, Jr., M.D.

WE cannot know the hazards of any medical procedure or drug until time has run its course. The hazards experienced by asbestos workers, by expectant mothers given stilbesterol to prevent abortion, and by patients with ankylosing spondylosis treated with x-rays did not become obvious until 20 or more years had elapsed. We recently encountered a patient with a thorium-induced cholangiocarcinoma. He had cerebral angiography in 1951.

Our patient had had previous abdominal radiography that showed opacities consistent with the administration of thorium. When seen in 1983 he complained of right upper abdominal pain. Abdominal radiographs showed a shift in the distribution of thorium and a mass containing thorium in the right upper quadrant. The patient died of a cardiac arrhythmia. Autopsy showed a large cholangiocarcinoma. The liver and spleen were radioactive and qualitative chemical analysis confirmed the presence of thorium in the organ.[1]

Thorium-232 is a radioactive element which decays by alpha-emission and has a physical half-life of 1.4 x 10^{10} years. Collodial thorium dioxide was introduced as a radiographic contrast agent in 1931, and was widely used for hepatolienography and angiography. Its tradename was Thorotrast.[2] Following intravascular injection, Thorotrast is deposited in the reticuloendothelial system, largely in the liver, spleen, and upper abdominal lymph nodes; it has a biological half-life of 400 years.[3]

The incidence of hepatic malignancy in patients receiving Thorotrast has been estimated as 66 times that in the general population.[4] Despite early and continuing evidence of its carcinogenicity, Thorotrast continued in use; a standard radiology text described its use in hepatolienography as late as 1956.

It is estimated that, worldwide, as many as 10 million patients received Thorotrast between 1931 and the early 1950s.[1, 2] Most of the induced neoplasms are found 29-35 years after Thorotrast injection. Those arising from injections in the 1950s will probably be encountered during the next several years. Any change in the distribution of Thorotrast on serial abdominal radiographs suggests neoplasia.

The Japanese have just reported a successful resection of a Thorotrast-induced cholangiocarcinoma. At followup eight months postoperatively, there is no evidence of metastasis or of another Thorotrast-induced tumor in the liver.[5]

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From Hugh Chatham Memorial Hospital, Elkin, NC 28621.

Features for Patients

An Epilepsy Information Network for North Carolina

Patricia Gibson

Epilepsy is a common medical disorder affecting an estimated 55,000 North Carolinians. Because of the stigma associated with epilepsy many persons do not admit that they have it. Often these persons do not seek treatment or do not follow medical recommendations as prescribed. The scientific progress that has been made over the past 40 years with regard to prevention and treatment of epilepsy and its associated problems often remains in the professional realm of knowledge. Dr. Kiffin Penry has stated, "While our ability to diagnose and treat epilepsy has increased tremendously, the application of this knowledge to improve the lives of patients with epilepsy is still discouraging."[1]

The Comprehensive Epilepsy Program (CEP) at Bowman Gray School of Medicine began in 1976 as a collaborative project with the Comprehensive Epilepsy Program at the University of Virginia under the direction of Dr. Fritz Dreifuss. There have been six such programs in the United States funded by the National Institute of Neurological and Communicative Disease and Stroke (NINCDS). The overall goal of the Comprehensive Epilepsy Program is to maximize the potential of each individual with epilepsy. All of the programs consist of three components — research, services, and education. The epilepsy program at Bowman Gray is no longer officially associated with the University of Virginia and is now under the direction of Dr. Kiffin Penry, former head of the Epilepsy Branch of NINCDS.

In addition to the routine medical diagnosis and treatment of seizures, the Comprehensive Epilepsy Program (CEP) makes available patient education and individual and family counseling. Epilepsy is a complicated disorder which often cuts deeply into the personal lives of patients; education of the patient and family therefore is of special importance. This process should begin early, as soon as the diagnosis is made, and should continue as an integral part of the comprehensive treatment. This may prevent many of the secondary psychosocial problems so frequently associated with epilepsy.

On-going counseling groups have been conducted by the CEP staff for young adults with epilepsy and for parents of children with intractable seizures. We have found group counseling to be a very successful treatment method for patients with epilepsy.[2]

At a conference sponsored by NINCDS in 1977, the Project Directors of the Comprehensive Epilepsy Programs across the nation agreed that the most potent instrument for early recognition, identification, and referral is public education. A well-educated parent or teacher is the individual most likely to recognize the onset of epilepsy and to request referral.

A review of the medical, health, and social science curricula reveals that little information is provided about epilepsy.[3] Few professionals who came in contact with individuals who have epilepsy are trained to provide the necessary comprehensive care and many do not recognize the serious social and psychological problems that are often a greater handicap than the actual seizures.

A primary objective of the CEP at Bowman Gray School of Medicine has been to develop effective education programs on epilepsy. During the past three years educational programs were conducted across the state for more than 10,000 professionals, including nurses, teachers, vocational rehabilitation counselors, etc. These people in the community play an important role in a person's adjustment to epilepsy. We have developed workshops on epilepsy in small communities and larger symposia designed for a variety of professionals in broader geographical areas. An evaluation of the impact of these educational programs found that those who attended had improved significantly in their knowledge of and comfort with epilepsy. There was a marked increase in the referral of children for neurological problems with subsequent improvement in the delivery of health care service in the community.[4]

One of the projects of the CEP, the Epilepsy Information Service, has received international recognition. This is a toll-free information service on epilepsy for North Carolina. This line provides information on all aspects of epilepsy for professionals, patients and family members, and the public. More than 10,000 calls have been received since the service opened in

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From Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC 27103.

July 1979. The telephone lines are open daily from 8:30 a.m. to 4:30 p.m. Three operators specially trained in epilepsy are available to talk with the callers. Two-thirds of the calls have been from patients and family members. What did the callers want to know? Thirty per cent called primarily to receive written information. Other frequent topics of concern included side effects of anticonvulsants, detection and diagnosis of seizures, problems in obtaining insurance, employment difficulties, and the need for assistance in purchasing medication. Of interest was the finding that four per cent of the callers with epilepsy did not have a physician.[5]

Some concerns of people calling the Epilepsy Information Service have been driving regulations, work restrictions, and the role of inheritance in epilepsy. I would like to discuss these three areas in more detail.

Driving

Most states have special procedures for licensing individuals with epilepsy and other disorders that would interfere with driving. Since 1971 there has been a unified motor vehicle code, but considerable variation exists within the states as to the seizure-free period of time required before patients with epilepsy can be licensed to drive. The period of seizure-free time required ranges from six months to two years to "unspecified times" (27 states).

The North Carolina law (Chapter 20-Motor Vehicles Article 2-Uniform Driver's License Act, Section 20-9 "What Persons Shall Not Be Licensed," Subsection (e)) reads:

> The Division shall not issue an operator's or chauffeur's license to any person when in the opinion of the Division such person is afflicted with or suffering from such physical or mental disability or disease as will serve to prevent such person from exercising reasonable and ordinary control over a motor vehicle while operating the same upon the highways, nor shall a license be issued to any person who is unable to understand highway warnings or direction signs. This act does not indicate a specific seizure-free period requirement.

The North Carolina Physician Guide for Determining Driver Limitation suggests that patients with epilepsy who have been seizure-free for at least a year and who are reliable in taking their medicines are considered good risks for the operation of private vehicles but should be advised against driving commercial or passenger transport vehicles. The guide also recommends that physicians make patients aware of the potential hazards of the drugs they are taking. The patient who is sensitive to photic stimuli should be advised that night driving may present a hazard because oncoming headlights may precipitate a seizure. Other precautions include avoidance of alcohol consumption for at least 24 hours before driving, avoidance of becoming overly fatigued, and not driving more than six hours a day.

The guide suggests that patients with epilepsy have frequent medical review of their condition. Even for those patients whose seizures have been controlled for a year, evaluations every six months are recommended.

The driver's license or renewal application asks "Have you suffered from a seizure disorder, heart trouble, paralysis, fainting, dizzy spells or other health problems within the past five years that might impair your driving?" A positive answer places the applicant into the North Carolina Medical Evaluation Program, which seeks to determine whether a person's physical or mental impairment might adversely affect driving skill. With the help of a Medical Consultant Panel which consists of approximately 36 physicians, the recommendation as to whether a person should be allowed to drive, whether his driving privileges should be revoked or modified, is made on the basis of information provided by a family physician or physician treating the person.[6]

When a patient makes application for a driver's license and indicates the condition of epilepsy, a medical evaluation form is given to the patient and the patient is responsible for requesting his physician to complete the form and return it to the Division of Motor Vehicles in Raleigh. This form should be completed and returned within 15 days of the initial application. The Division frequently complains that these forms are not received promptly and are sometimes incomplete.

The medical form requests information regarding seizure type,

SEIZURE MAN
First Aid For Seizures
"THAT CROWD LOOKS SCARED! I'D BETTER SEE WHAT'S HAPPENING
WEST
"HELP! LITTLE DAVID'S HAVING A SEIZURE! WE DON'T KNOW WHAT TO DO!"
"FIRST, WE SHOULD PUT A JACKET OR SWEATER UNDER HIS HEAD SO HE WON'T BUMP IT ON THE SIDEWALK..."

Developed by Carol Ford.

seizure frequency, medicotions and side effects, EEG results, anticonvulsont blood level determinations, information about auros and other neurological symptoms. Notification of approvol or disapproval of the driver's license will be sent to the applicant from the Division of Motor Vehicles.

If driving privileges ore denied, the applicant has the right to an appeal. This process consists of a hearing held in Raleigh, during which the applicant moy defend his/her ability to drive and can bring witnesses to testify, either character witnesses or those from the medical profession. All of the information in the records of the applicant is also available to members of the Review Board and they may choose to ask questions of the applicant to help clarify points.

North Corolina law does not require a physician to report a patient with epilepsy — the moral obligation is left up to the individual. However, it is extremely important for the physician to discuss with the patient his recommendation for driving and potential dangers of driving with uncontrolled seizures. This is then documented in the patient's chart. Many physicians also follow with a letter to the patient, further documenting the discussion.

Whether or not a stote law requires a physician to report an epileptic, the physician has special legal responsibilities if he or she knows that the patient has uncontrolled epilepsy ond is continuing to drive. "If the physician clearly identifies that a patient poses a substantial risk to others, which the physician cannot reduce by his or her best professional effort, it seems reosonable to require the physician to notify those with lawful authority to restrict the patient's driving. This requirement is compatible with Section 9 of the Principles of Medicol Ethics which bars disclosure of confidentiol medical information unless it becomes necessary in order to protect the welfare of the individual or of the community."[7]

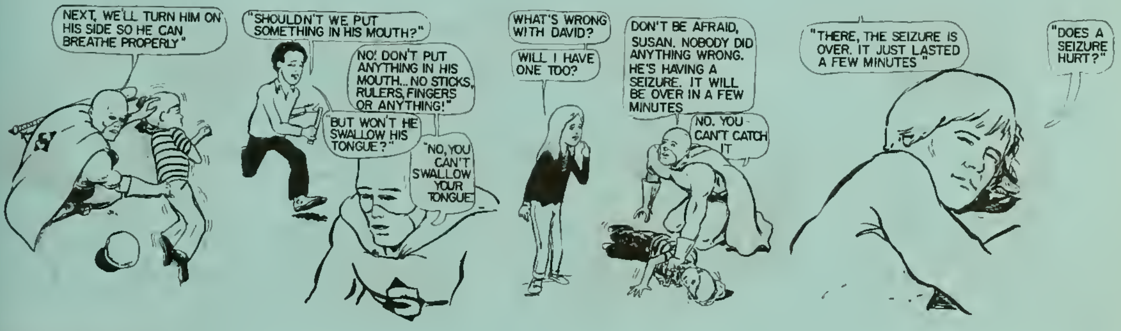
At the bottom of the driver's license application is a statement which says, "The above signed applicont states that the information given herein is true, sworn and subscribed to before me." This is witnessed by the driver's license examiner. Falsification of this portion of the form, if discovered, results in automatic revocation of the driver's license. Falsification of this form may also have implications with regard to insurance coverage. Should an accident occur and falsification of the form be verified, then the insurance agency may elect not to provide collision coverage.

Employment

One of the most painful problems experienced by many persons with epilepsy is their inability to find employment. Despite the major advances in treatment and rehabilitation, moking it possible for more than half of those with epilepsy to lead normal lives, and despite new federal and state legislation prohibiting discrimination on the basis of handicopping condition, the number of unemployed among those persons with epilepsy fully capoble of work remains disproportionotely high — over twice the nationol average. Even greater is the number who are underemployed, working in low-paying meniol positions with little opportunity for advancement or change. The result is a tremendous woste of human potential, not to mention the impact on life of the individual with epilepsy.[8]

Many employers have an outdated and erroneous image of persons with epilepsy and, thus, are hesitant to consider them for hiring. They often fear increased accident rates, increased absenteeism, ond increased insurance and workers' compensation costs. However, studies show people with epilepsy hove slightly better sofety records than other workers. These studies show people with epilepsy to be reliable and conscientious workers, who rate better in job performance, attendance, and job stability than other workers. And they show that accident insuronce rotes stay about the same when someone with epilepsy is employed.[9, 10]

In the past there has been a tendency to restrict drastically the job opportunities available to the employee with epilepsy. Such restrictions are based on the fear of possible harm that might result if a seizure took place in certain environments. Machinery, handling of hot or caustic materials, work at heights, and similar activities were automatically barred to the person with epilepsy. Copplestone studied epileptics in New Zealand factories and was one of the few authors besides the Rus-


NEXT, WE'LL TURN HIM ON HIS SIDE SO HE CAN BREATHE PROPERLY"
"SHOULDN'T WE PUT SOMETHING IN HIS MOUTH?"
NO! DON'T PUT ANYTHING IN HIS MOUTH... NO STICKS, RULERS, FINGERS OR ANYTHING!"
"BUT WON'T HE SWALLOW HIS TONGUE?"
"NO, YOU CAN'T SWALLOW YOUR TONGUE
WHAT'S WRONG WITH DAVID?
WILL I HAVE ONE TOO?
DON'T BE AFRAID, SUSAN. NOBODY DID ANYTHING WRONG. HE'S HAVING A SEIZURE. IT WILL BE OVER IN A FEW MINUTES
NO. YOU CAN'T CATCH IT
"THERE, THE SEIZURE IS OVER. IT JUST LASTED A FEW MINUTES "
"DOES A SEIZURE HURT?"

sions who concluded that the old view concerning epileptics around machinery was over-cautious.[11] He requested factory managers to place epileptics in what *they* considered to be suitable employment, a most ingenious twist. The results were enlightening. Approximately one-half of those responding said that office work and clerical activities were most suited, with sedentary manual work another 25% of the response. About 10% included many other job slots that were not grouped into categories. An additional 20% replied that epilepsy did not matter when choosing a job slot, a wholly unexpected answer.

It is the opinion of the Occupational Medical Practice Committee of the American Occupational Medical Association and its consultants that the physician evaluating the condition of a patient with a history of epilepsy for job placement must have a knowledge of the Federal Rehabilitation Act of 1973. This act has been interpreted to preclude rejecting applicants or employees on the basis of physical or mental disabilities unless the disability is such as to render the applicant not qualified for the jobs that are available. An applicant or employee can be disqualified on the basis of a pre-employment examination only if his or her handicap "creates a substantial risk of imminent danger to self or others."

It is suggested that the examining physician not try to advise on placement of the employee or applicant with epilepsy before obtaining a detailed medical history and performing a thorough medical examination. A determination should be made on the reliability and cooperation of the applicant as well as the degree of medical control of the condition. Available medical data should be obtained with the individual's consent from the private physician. The frequency, severity, and duration, as well as the nature and type of seizure, should be determined.

According to the Occupational Medical Practice Committee:

> The epileptic employee should be examined annually by a physician. As a general rule he/she should not be permitted to work at heights greater than 1.7 m from ground level unless there is built-in physical protection to prevent the employee from falling a distance greater than his/her height. The epileptic should not be permitted to operate hazardous or mobile equipment and in fact should not work immediately adjacent to such equipment. Such work restrictions should be applied for at least 2 years after onset of the seizure disorder. The restrictions may be removed if the employee is free of seizures for one year, once the 2 year limit has been reached. Consideration should be given to reapplying work restrictions when the patient is removed from medication or if medication is to be changed. It is important that application or reapplication of restrictions must be determined by the physician's knowledge of the employee and the employee's reliability as well as past history of control.

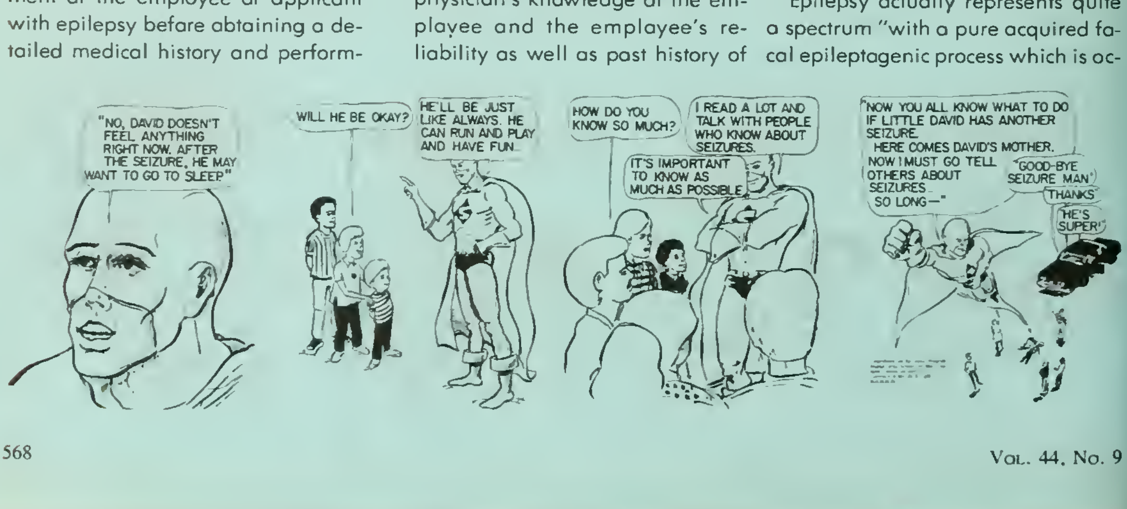
Certain jobs and working conditions such as operation of interstate trucks, school buses and vehicles with hazardous or flammable cargo are not suitable for persons with certain types of epilepsy.[12]

While it is still true that some people with epilepsy should avoid certain work, these restrictions are by no means appropriate for everyone. Job requirements and the specific history of epilepsy in the individual should be made on the basis of that evaluation rather than on the basis on blanket prohibitions. If a person's seizure condition is carefully evaluated on an individual basis, taking into account the frequency, nature, type and other factors associated with the seizures, he/she can become an effective employee. Seizures need not in themselves be a barrier to employment.

Inheritance

The genetic aspects of epilepsy are a major concern for persons with epilepsy and for their family members. The physician may be confronted with many questions in this area. Unfortunately, the status of knowledge of the hereditary forms of epilepsy is unclear in many areas. In earlier years epilepsy was commonly thought to be inherited. In fact, not until 1967 was the law repealed in North Carolina which required sterilization of epileptic females before marriage.

Epilepsy actually represents quite a spectrum "with a pure acquired focal epileptogenic process which is oc-


"NO, DAVID DOESN'T FEEL ANYTHING RIGHT NOW. AFTER THE SEIZURE, HE MAY WANT TO GO TO SLEEP"
WILL HE BE OKAY?
HE'LL BE JUST LIKE ALWAYS. HE CAN RUN AND PLAY AND HAVE FUN.
HOW DO YOU KNOW SO MUCH?
I READ A LOT AND TALK WITH PEOPLE WHO KNOW ABOUT SEIZURES.
IT'S IMPORTANT TO KNOW AS MUCH AS POSSIBLE.
"NOW YOU ALL KNOW WHAT TO DO IF LITTLE DAVID HAS ANOTHER SEIZURE. HERE COMES DAVID'S MOTHER. NOW I MUST GO TELL OTHERS ABOUT SEIZURES. SO LONG—"
"GOOD-BYE SEIZURE MAN"
"THANKS"
"HE'S SUPER!"

quired at one end and at the other extreme an almost pure genetic form with very little acquired cerebral dysfunction." Most patients fall somewhere in between those two extremes. The identification of a genetic influence in a patient with epilepsy depends on the accuracy of the diagnosis. The risk also varies widely according to the seizure type, the cause of the seizure disorder, and the sex and age of the patient. There are some specific areas in which there seem to be rather clear indications of definite hereditary patterns, e.g., the epilepsy associated with the spike and wave EEG trait. There also seems to be some information regarding a clear inheritance pattern for febrile seizures and of certain electroencephalographic hereditary patterns.

According to Jennings et al,[13] the recurrence risk for epilepsy in close relatives may vary from 2% to 5% to 50%, depending on the etiology of the seizure disorder in their proband. Newmark and Penry note that if individuals are included who have suffered a single seizure, 30 to 40% of selected seizure patients will have a positive family history and up to 10% of their offspring may have epilepsy, with the highest rate present in the offspring of affected mothers. "When patients manifest generalized seizure disorders, generalized tonic-clonic seizures, absence attacks, photosensitive epilepsy, and febrile convulsions, the rate of seizures in their relatives is even higher, often twice the rate found in the relatives of unselected patients. In patients who have partial and symptomatic seizures, a genetic trend has not been definitely shown."[14]

For patients calling the Epilepsy Information Service in regard to inheritance, the following general information is given which is published in a brochure by the Epilepsy Foundation of America:[15]

> The risk of having a seizure at some time in one's life is about 10%. This includes a single isolated seizure, a febrile seizure or recurrent seizures.
>
> The prevalence of epilepsy in the general population is about 1% or less. When one of the parents has epilepsy the risk for the offspring is about 6%. If both parents have epilepsy, the risk is 10% to 12%. These are general figures. For more precise information we suggest individuals consult with their physician about genetic counseling.

Pamphlets and brochures on epilepsy have been developed by the staff. Some of the pamphlets, such as "Seizure Man," have been written in comic book form to teach children about first-aid for seizures. A packet of these educational materials is available free of charge to all callers of the Epilepsy Information Service.

A follow-up questionnaire is sent to all first-time callers. It inquires about the caller's satisfaction with the service, impact of the information, whether action was taken as a result of the call, and whether the information was shared with others. Additional demographic information is collected and comments and suggestions for improvement of the service are elicited. The return rate of the questionnaires has been fifty-six per cent. Ninety-eight per cent of the callers shared the information with others. Seventy-six per cent of the professionals indicated that they had used the information for educational purposes.

The Epilepsy Information Service, with the close cooperation of neurologists in academic and private settings across the state, has had considerable impact in increasing access to and utilization of resources by persons with epilepsy. One of the most important aspects of this project is its role in prevention of the medical and social problems associated with epilepsy. By helping persons identify symptoms of seizures, alerting them to side effects of medicines, and making them aware of available resources, we have been able to significantly improve the lives of those with epilepsy.

As a result of the success of the Epilepsy Information Service, this project is now being used as a model by the Epilepsy Foundation of America in development of a nationwide epilepsy information service. Several other countries — Australia, Japan, and the Netherlands — have also expressed interest in developing a similar service.

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You and Your Health Insurance

James C. Mau and Bess M. Cebe

Health care costs are a major item in everyone's budget, and health insurance is an important factor in meeting those costs. Therefore it is important that you understand what portions of health care costs are covered by your insurance. Illness can and frequently does result in a severe financial hardship because of inadequate coverage. People usually have a better understanding of automobile insurance than they do of their health insurance. The reason may be that the health insurance is often provided by their employer and people accept what is offered without knowing what coverage they have, or people feel that they are more likely to incur a financial loss from an automobile accident than from a medical problem. With hospital costs approaching $1,000 a day, we can easily see that this may not be true. The law requires that you have a minimum amount of automobile insurance. There is no such law for health insurance. It is left up to the individual and not everyone adequately shoulders this responsibility.

This is the second of a series of articles pointing out your responsibility regarding health insurance, what questions you should be asking, and who to ask. The first article in this series was written by James Brady.[1] This section addresses persons who have medical insurance under Medicare and who frequently buy policies that supplement and coordinate with the Medicare medical insurance. We will touch on the more common questions and issues. We urge you to read "Your Medicare Handbook," which is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Medicare is a federal health insurance program covering medical costs for persons 65 years of age and older and certain disabled persons. It consists of two parts. Part A is *hospital* insurance and covers portions of hospital charges for all senior citizens receiving Social Security benefits. There is no means test and no premium. Part B is *medical* insurance. It is optional and the persons enrolled in Part B pay a monthly premium which is generally deducted from the Social Security check. The medical insurance covers a portion of physician fees for inpatient and outpatient services plus a portion of the costs related to laboratory and x-ray charges incurred in the ambulatory setting. Part B can also pay for home health services. There is an annual deductible of $75 before coverage begins. Tables 1, 2, 3, and 4 show services covered by Medicare medical insurance and those that are not covered.

Table 1
Major Outpatient Services Covered by Medical Insurance

Medicare medical insurance helps pay for these services:

1. Services in an emergency room or outpatient clinic
2. Laboratory tests billed by the hospital
3. X-rays and other radiology services billed by the hospital
4. Medical supplies such as splints and casts
5. Drugs and biologicals which cannot be self-administered
6. Blood transfusions furnished to you as an outpatient

Table 2
Some Outpatient Hospital Services Not Covered by Medical Insurance

Medicare medical insurance cannot pay for these services:

1. Routine physical examinations and tests directly related to such examinations
2. Eye or ear examinations to prescribe or fit eyeglasses or hearing aids
3. Immunizations (except pneumococcal vaccinations or immunizations required because of an injury or immediate risk of infection)
4. Routine foot care

Medicare Part B has special arrangements covering outpatient physical therapy, independent laboratory services, ambulance service, prosthetic devices, durable medical equipment, portable x-ray services, medical supplies, pre-admission diagnostic testing, pneumococcal vaccine, home health care services, blood transfusions and renal dialysis. If in need of any of the above, consult the Medicare Handbook published by the Social Security Agency.

Table 3
Major Doctors' Services Covered by Medical Insurance

Medicare medical insurance can help pay for these services:

1. Medical and surgical services, including anesthesia
2. Diagnostic tests and procedures that are part of your treatment
3. Other services which are ordinarily furnished in the doctor's office and included in his bill, such as:
   - X-rays you receive as part of your treatment
   - Services of your doctor's office nurse
   - Drugs and biologicals that cannot be self-administered
   - Transfusions of blood and blood components
   - Medical supplies
   - Physical therapy and speech pathology services

Table 4
Some Doctors' Services Not Covered by Medical Insurance

Medicare medical insurance cannot pay for these services:

1. Routine physical examinations and tests directly related to such examinations
2. Routine foot care
3. Eye or hearing examinations for prescribing or fitting eyeglasses or hearing aids
4. Immunizations (except pneumococcal vaccinations or immunizations required because of an injury or immediate risk of infection)
5. Cosmetic surgery unless it is needed because of accidental injury or to improve the functioning of a malformed part of the body

Some doctors and suppliers use the

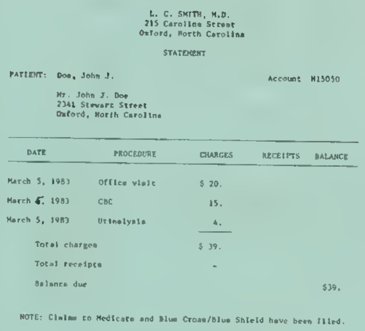
From the Department of Medicine, Duke University Medical Center, Durham, NC 27710.

assignment method and agree that the total charge for covered services will be the charge approved by the Medicare carrier. Medicare approves fees that fall within the prevailing and customary range for your area as determined by Medicare. The doctors and laboratories receive 80% of the approved fee from Medicare after the $75 deductible has been met for that calendar year. The Medicare carrier (in North Carolina, the Prudential Life Insurance Company) sends the check directly to the health care provider. You are billed by the provider for 20% of approved fees that Medicare has not reimbursed, plus any remaining deductible. Prudential sends you a statement, entitled "Explanation of Medicare Benefits" (figure #4), which also tells how much of the $75 deductible has been met.

Health care providers who do not accept assignment will bill you the full cost of services. Prudential will determine the portion covered by Medicare B and mail a check for 80% of that amount, less any deductible, to you. You pay the health care providers directly. The bill for care usually will be greater than the Medicare insurance check you receive. You are out-of-pocket for the difference. Supplementary insurance can offset a portion of out-of-pocket expenses, but it is your responsibility to see that the doctor is fully paid.

We will trace the processing of a Medicare claim for a visit to the physician's office. Medicare B may be the only coverage, or Medicare B may be the primary coverage with a second policy which pays a portion of costs not covered by B.

If you are 65 years or older, a clerk in the doctor's office will ask if you have Medicare B coverage and/or any insurance which supplements B. You in turn will ask if the doctor accepts the Medicare assignment. The doctor's office and other providers will send you a bill (figure #1) and will submit a claim to Medicare (figure #2) which provides a detailed listing of what was done, what the charges are, and what diagnoses were suspected or confirmed. This claim goes to Prudential Life Insurance Company which does the paper work on processing the claim for Medicare. Prudential reviews the claim to see if the care provided is covered. It also compares the diagnosis with the studies ordered to see if they are compatible and whether the visit was warranted. If Prudential determines that the services are covered by B, they will pay 80% of the approved charges to you, or to your doctor if assignment is accepted, provided the deductible of $75 for the calendar year has been met.



L. C. SMITH, M.D.
215 Carolina Street
Oxford, North Carolina

STATEMENT

PATIENT: Doe, John J.　　Account H15050

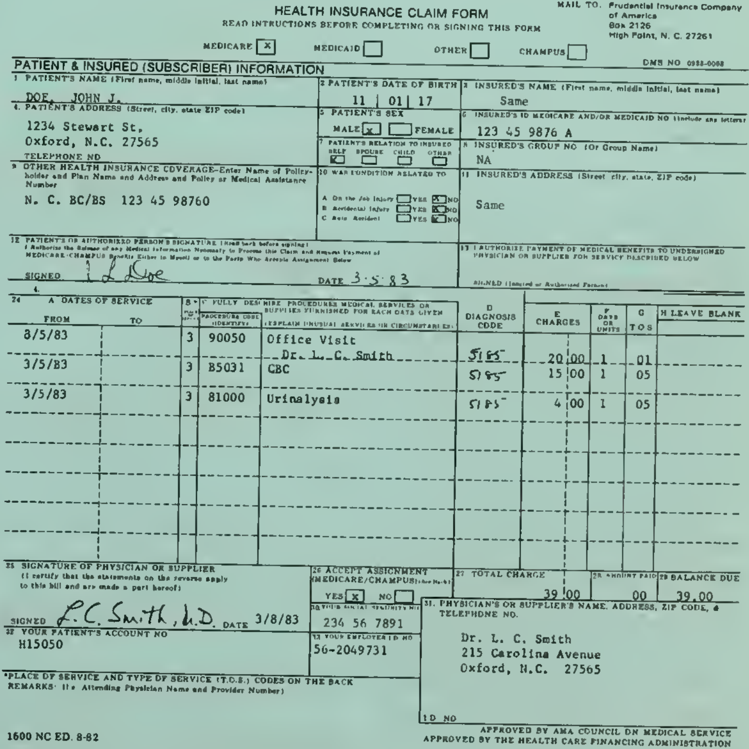
Mr. John J. Doe
2341 Stewart Street
Oxford, North Carolina

DATE	PROCEDURE	CHARGES	RECEIPTS	BALANCE
March 5, 1983	Office visit	$ 20.		
March 5, 1983	CBC	15.		
March 5, 1983	Urinalysis	4.		
	Total charges	$ 39.		
	Total receipts	-		
	Balance due			$39.

NOTE: Claims to Medicare and Blue Cross/Blue Shield have been filed.

Figure 1. *Bill from doctor for office visit and laboratory procedures.*

Many persons covered by Part B purchase supplementary policies which pay the $75 deductible and which cover a part of the gap between the charges of the health care provider and the payment made by Medicare B. If you have a second policy of this nature, you should send that company a copy of the Explanation of Benefits (figure #4) provided to you by Prudential in their role as carrier for Medicare, along with a detailed breakdown of the charges made by the doctor's office and other suppliers (figure #1). The second company will determine its liability



HEALTH INSURANCE CLAIM FORM
READ INTRUCTIONS BEFORE COMPLETING OR SIGNING THIS FORM

MAIL TO. Prudential Insurance Company
of America
Box 2126
High Point, N. C. 27261

MEDICARE ☒　MEDICAID ☐　OTHER ☐　CHAMPUS ☐

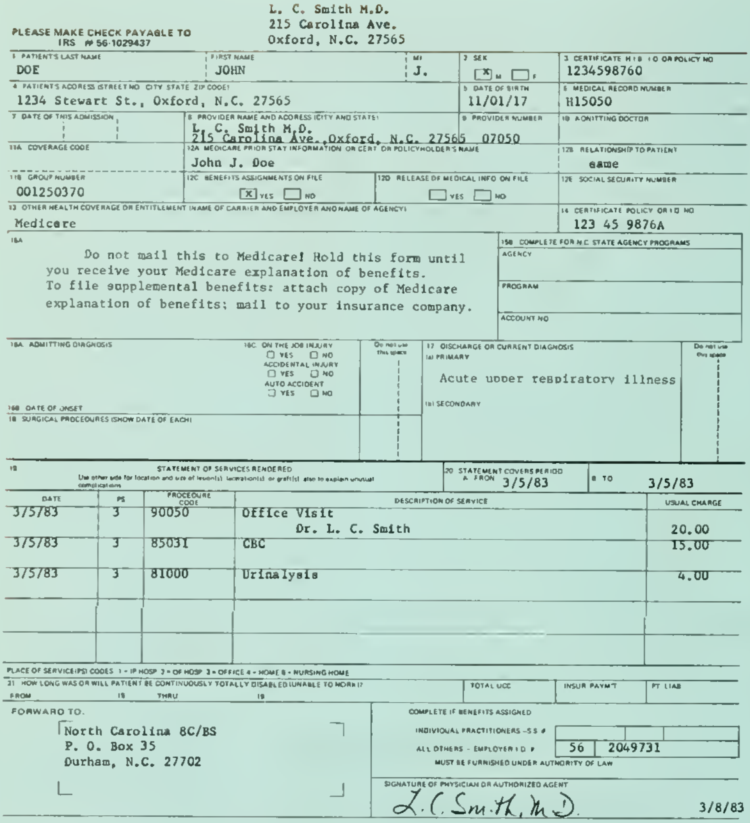
PATIENT & INSURED (SUBSCRIBER) INFORMATION　　OMB NO 0938-0008

1 PATIENT'S NAME (First name, middle initial, last name): DOE, JOHN J.
2 PATIENT'S DATE OF BIRTH: 11 | 01 | 17
3 INSURED'S NAME (First name, middle initial, last name): Same
4 PATIENT'S ADDRESS (Street, city, state ZIP code): 1234 Stewart St., Oxford, N.C. 27565
TELEPHONE NO
5 PATIENT'S SEX: MALE ☒ ☐ FEMALE
6 INSURED'S ID MEDICARE AND/OR MEDICAID NO (Include any letters): 123 45 9876 A
7 PATIENT'S RELATION TO INSURED: SELF ☒ SPOUSE ☐ CHILD ☐ OTHER ☐
8 INSURED'S GROUP NO (Or Group Name): NA
9 OTHER HEALTH INSURANCE COVERAGE—Enter Name of Policyholder and Plan Name and Address and Policy or Medical Assistance Number: N. C. BC/BS 123 45 98760
10 WAS CONDITION RELATED TO
A On the Job Injury ☐ YES ☒ NO
B Accidental Injury ☐ YES ☒ NO
C Auto Accident ☐ YES ☒ NO
11 INSURED'S ADDRESS (Street, city, state, ZIP code): Same
12 PATIENT'S OR AUTHORIZED PERSON'S SIGNATURE (Read back before signing) I Authorize the Release of any Medical Information Necessary to Process this Claim and Request Payment of MEDICARE/CHAMPUS Benefits Either to Myself or to the Party Who Accepts Assignment Below
SIGNED J L Doe　DATE 3·5·83
13 I AUTHORIZE PAYMENT OF MEDICAL BENEFITS TO UNDERSIGNED PHYSICIAN OR SUPPLIER FOR SERVICE DESCRIBED BELOW
SIGNED (Insured or Authorized Person)

24 A DATES OF SERVICE FROM	TO	B PLACE OF SERVICE	C PROCEDURE CODE (IDENTIFY)	FULLY DESCRIBE PROCEDURES, MEDICAL SERVICES OR SUPPLIES FURNISHED FOR EACH DATE GIVEN (EXPLAIN UNUSUAL SERVICES OR CIRCUMSTANCES)	D DIAGNOSIS CODE	E CHARGES	F DAYS OR UNITS	G TOS	H LEAVE BLANK
3/5/83		3	90050	Office Visit Dr. L. C. Smith	51 85	20 00	1	01	
3/5/83		3	85031	CBC	51 85	15 00	1	05	
3/5/83		3	81000	Urinalysis	51 85	4 00	1	05	

25 SIGNATURE OF PHYSICIAN OR SUPPLIER (I certify that the statements on the reverse apply to this bill and are made a part hereof)
SIGNED L.C. Smith, M.D.　DATE 3/8/83
26 ACCEPT ASSIGNMENT (MEDICARE/CHAMPUS) YES ☒ NO ☐
27 TOTAL CHARGE: 39 00
28 AMOUNT PAID: 00
29 BALANCE DUE: 39.00
30 YOUR SOCIAL SECURITY NO: 234 56 7891
31 PHYSICIAN'S OR SUPPLIER'S NAME, ADDRESS, ZIP CODE, & TELEPHONE NO.: Dr. L. C. Smith, 215 Carolina Avenue, Oxford, N.C. 27565
32 YOUR PATIENT'S ACCOUNT NO: H15050
33 YOUR EMPLOYER I D NO: 56-2049731
*PLACE OF SERVICE AND TYPE OF SERVICE (T.O.S.) CODES ON THE BACK
REMARKS: (I.e. Attending Physician Name and Provider Number)
I D NO
1600 NC ED. 8-82
APPROVED BY AMA COUNCIL ON MEDICAL SERVICE
APPROVED BY THE HEALTH CARE FINANCING ADMINISTRATION

Figure 2. *Health Insurance Claim Form: charges for the visit to the doctor's office and laboratories, to be submitted to Medicare carrier (Prudential).*



PLEASE MAKE CHECK PAYABLE TO
IRS # 56-1029437

L. C. Smith M.D.
215 Carolina Ave.
Oxford, N.C. 27565

1 PATIENT'S LAST NAME: DOE
FIRST NAME: JOHN
MI: J.
2 SEX: ☒ M ☐ F
3 CERTIFICATE H I B I D OR POLICY NO: 1234598760
4 PATIENT'S ADDRESS (STREET NO CITY STATE ZIP CODE): 1234 Stewart St., Oxford, N.C. 27565
5 DATE OF BIRTH: 11/01/17
6 MEDICAL RECORD NUMBER: H15050
7 DATE OF THIS ADMISSION:
8 PROVIDER NAME AND ADDRESS (CITY AND STATE): L. C. Smith M.D. 215 Carolina Ave., Oxford, N.C. 27565
9 PROVIDER NUMBER: 07050
10 ADMITTING DOCTOR:
11A COVERAGE CODE:
12A MEDICARE PRIOR STAY INFORMATION OR CERT OR POLICYHOLDER'S NAME: John J. Doe
12B RELATIONSHIP TO PATIENT: same
11B GROUP NUMBER: 001250370
12C BENEFITS ASSIGNMENTS ON FILE: ☒ YES ☐ NO
12D RELEASE OF MEDICAL INFO ON FILE: ☐ YES ☐ NO
12E SOCIAL SECURITY NUMBER:
13 OTHER HEALTH COVERAGE OR ENTITLEMENT (NAME OF CARRIER AND EMPLOYER AND NAME OF AGENCY): Medicare
14 CERTIFICATE POLICY OR I D NO: 123 45 9876A
15A: Do not mail this to Medicare! Hold this form until you receive your Medicare explanation of benefits. To file supplemental benefits: attach copy of Medicare explanation of benefits; mail to your insurance company.
15B COMPLETE FOR N.C. STATE AGENCY PROGRAMS
AGENCY:
PROGRAM:
ACCOUNT NO:
16A ADMITTING DIAGNOSIS:
16C ON THE JOB INJURY ☐ YES ☐ NO
ACCIDENTAL INJURY ☐ YES ☐ NO
AUTO ACCIDENT ☐ YES ☐ NO
Do not use this space
17 DISCHARGE OR CURRENT DIAGNOSIS
(a) PRIMARY: Acute upper respiratory illness
(b) SECONDARY:
Do not use this space
16B DATE OF ONSET:
18 SURGICAL PROCEDURES (SHOW DATE OF EACH):
19 STATEMENT OF SERVICES RENDERED
Use other side for location and size of lesion(s), laceration(s) or graft(s); also to explain unusual complications
20 STATEMENT COVERS PERIOD A FROM 3/5/83 B TO 3/5/83

DATE	PS	PROCEDURE CODE	DESCRIPTION OF SERVICE	USUAL CHARGE
3/5/83	3	90050	Office Visit Dr. L. C. Smith	20.00
3/5/83	3	85031	CBC	15.00
3/5/83	3	81000	Urinalysis	4.00

CARRIER

PLACE OF SERVICE(PS) CODES 1 - IP HOSP 2 - OP HOSP 3 - OFFICE 4 - HOME 5 - NURSING HOME
21 HOW LONG WAS OR WILL PATIENT BE CONTINUOUSLY TOTALLY DISABLED (UNABLE TO WORK)? FROM 19 THRU 19
TOTAL UCC:
INSUR PAYM'T:
PT LIAB:

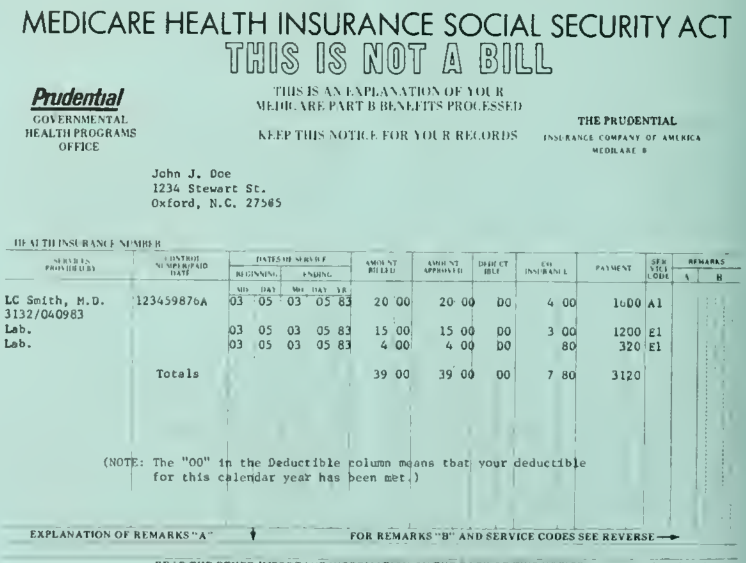
FORWARD TO:
North Carolina BC/BS
P. O. Box 35
Durham, N.C. 27702

COMPLETE IF BENEFITS ASSIGNED
INDIVIDUAL PRACTITIONERS - S S #
ALL OTHERS - EMPLOYER I D #: 56 2049731
MUST BE FURNISHED UNDER AUTHORITY OF LAW
SIGNATURE OF PHYSICIAN OR AUTHORIZED AGENT: L. C. Smith, M.D. 3/8/83

Figure 3. *Itemized statement given to the patient by the provider if the patient is to file claim far supplemental insurance.*

and send their payment either to you or to the doctor's office. You can determine your responsibility only by monitoring the response of your insurance company (figure #5). The benefits from Medicare B and from the supplementary insurance policy are coordinated. Only one policy pays primary benefits for any one charge. This insures that the patient makes no profit from the policy.

The following are examples of documents: figure #1, bill from doctor; figure #2, to submit a claim to Medicare; figure #3, to submit a claim to a secondary company; figure #4, the response from Medicare; figure #5, response from the secondary company; and figure #6, a summary from the doctor's office which, in this example, shows the $4 still owed by the patient.



MEDICARE HEALTH INSURANCE SOCIAL SECURITY ACT
THIS IS NOT A BILL

Prudential
GOVERNMENTAL
HEALTH PROGRAMS
OFFICE

THIS IS AN EXPLANATION OF YOUR
MEDICARE PART B BENEFITS PROCESSED

KEEP THIS NOTICE FOR YOUR RECORDS

THE PRUDENTIAL
INSURANCE COMPANY OF AMERICA
MEDICARE B

John J. Doe
1234 Stewart St.
Oxford, N.C. 27565

HEALTH INSURANCE NUMBER

SERVICES PROVIDED BY	CONTROL NUMBER/PAID DATE	DATES OF SERVICE BEGINNING MO	DAY	ENDING MO	DAY	YR	AMOUNT BILLED	AMOUNT APPROVED	DEDUCTIBLE	CO-INSURANCE	PAYMENT	SERVICE CODE	REMARKS A	B
LC Smith, M.D. 3132/040983	123459876A	03	05	03	05	83	20 00	20 00	00	4 00	1600	A1		
Lab.		03	05	03	05	83	15 00	15 00	00	3 00	1200	E1		
Lab.		03	05	03	05	83	4 00	4 00	00	80	320	E1		
	Totals						39 00	39 00	00	7 80	3120			

(NOTE: The "00" in the Deductible column means that your deductible for this calendar year has been met.)

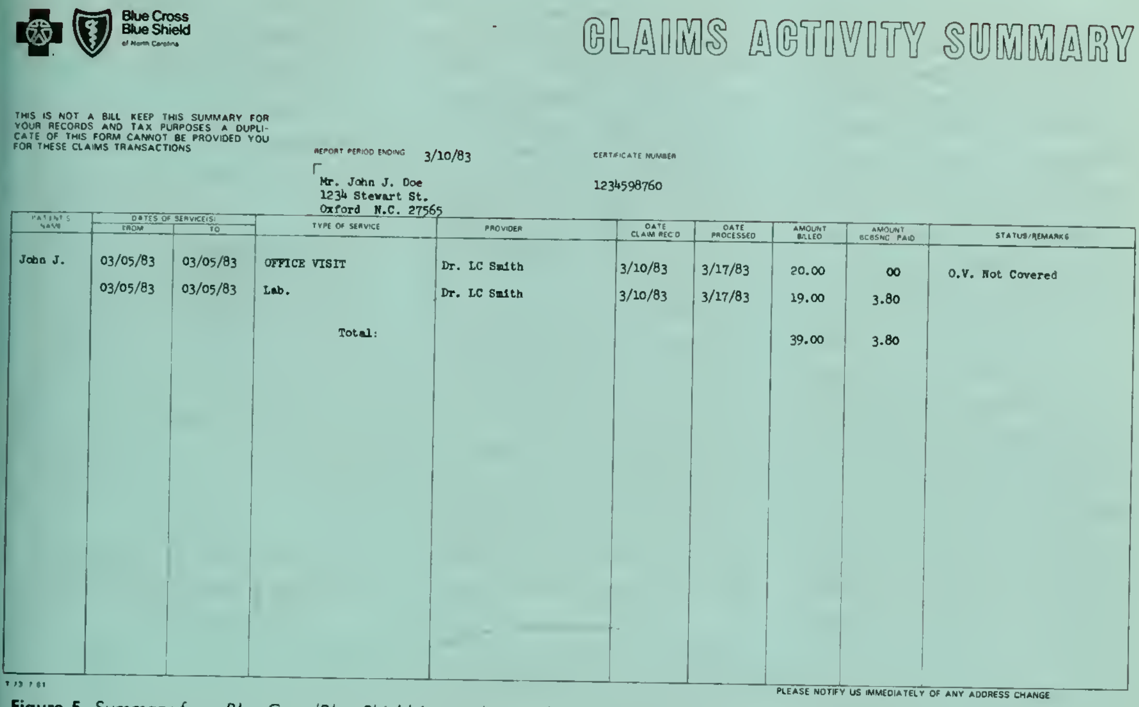
EXPLANATION OF REMARKS "A"
FOR REMARKS "B" AND SERVICE CODES SEE REVERSE →
READ THE OTHER IMPORTANT INFORMATION ON THE BACK OF THIS NOTICE
83970 ED 7-82

Figure 4. *Explanation of Your Benefits: a report to the patient showing Medicare's response to the Claim Form (#2). If you are to submit a claim to your supplementary company, enclose a copy of this form.*

In our example, the doctor has used a laboratory not connected to a medical center, and charges are based on "usual and customary" fees. In a *medical center*, the laboratories may be a part of an institutional or medical center operation and the charges reflect the cost of doing the tests (technical cost) plus the fee of the doctor interpreting the laboratory values. In the case of the medical center laboratory, these technical charges are sent to the Part A intermediary (for North Carolina, Blue Cross); the fee for the doctor's interpretation is determined by the "usual and customary" standard and the charge goes directly to the Part B carrier (Prudential). The net effect is that the patient may receive two additional forms indicating charges and payments. These charges count toward the $75 deductible for office visits and the two additional forms indicate the amount credited to the office deductible and, if this amount has been exceeded, the amount paid by Medicare.

Reference

1. Brody JA Jr. Understanding your health insurance benefits. NC Med J 1983;44:299-302.



Blue Cross Blue Shield of North Carolina

CLAIMS ACTIVITY SUMMARY

THIS IS NOT A BILL KEEP THIS SUMMARY FOR YOUR RECORDS AND TAX PURPOSES A DUPLICATE OF THIS FORM CANNOT BE PROVIDED YOU FOR THESE CLAIMS TRANSACTIONS

REPORT PERIOD ENDING 3/10/83

CERTIFICATE NUMBER 1234598760

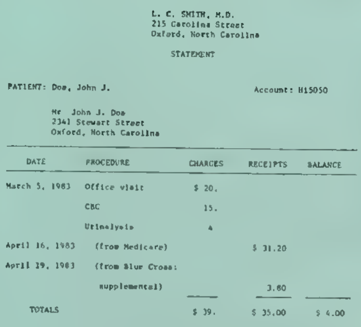
Mr. John J. Doe
1234 Stewart St.
Oxford N.C. 27565

PATIENT'S NAME	DATES OF SERVICE(S)		TYPE OF SERVICE	PROVIDER	DATE CLAIM REC'D	DATE PROCESSED	AMOUNT BILLED	AMOUNT BCBSNC PAID	STATUS/REMARKS
	FROM	TO							
John J.	03/05/83	03/05/83	OFFICE VISIT	Dr. LC Smith	3/10/83	3/17/83	20.00	00	O.V. Not Covered
	03/05/83	03/05/83	Lab.	Dr. LC Smith	3/10/83	3/17/83	19.00	3.80	
			Total:				39.00	3.80	

7 73 7 81

PLEASE NOTIFY US IMMEDIATELY OF ANY ADDRESS CHANGE

Figure 5. *Summary from Blue Cross/Blue Shield (a supplemental intermediary) listing charges and payments.*



L. C. SMITH, M.D.
215 Carolina Street
Oxford, North Carolina

STATEMENT

PATIENT: Doe, John J.

Account: H15050

Mr John J. Doe
2341 Stewart Street
Oxford, North Carolina

DATE	PROCEDURE	CHARGES	RECEIPTS	BALANCE
March 5, 1983	Office visit	$ 20.		
	CBC	15.		
	Urinalysis	4		
April 16, 1983	(from Medicare)		$ 31.20	
April 19, 1983	(from Blue Cross: supplemental)		3.80	
TOTALS		$ 39.	$ 35.00	$ 4.00

Figure 6. *A summary from the doctor's office listing charges and amounts paid therefor by the carrier and intermediary.*

Nonprescription Appetite Suppressants

Richard Drew, R.Ph.

Because of heavy promotion and easy availability, nonprescription appetite supressants have become very popular among individuals attempting to lose weight. Such products may contain a variety of ingredients ranging from weak central nervous stimulants to vitamins. It is essential to understand the activity, use and limitations of these drugs in the treatment of obesity; they must be selected appropriately and administered in conjunction with medical supervision and modification of dietary habits.

Phenylpropanolamine (PPA), most commonly used as an oral decongestant, is found in many nonprescription appetite supressants. Examples of products containing PPA include Dietac, Westrim, and Dexatrim. Chemically and pharmacologically related to substances normally found in the body involved in central nervous system activity and blood pressure control, PPA's effectiveness in appetite control has received much debate. Although its exact mechanism of action remains unknown, a recent FDA advisory panel declared it as safe and effective for up to three months when used as an adjunct in weight reduction.[1] Side effects

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From the Department of Pharmacy, Duke University Medical Center, Durham, NC 27710.

associated with PPA primarily involve the cardiovascular and central nervous systems (especially if the recommended dosage is exceeded) and most commonly include nervousness, restlessness, insomnia, headache and nausea. It may also cause excessive elevations in blood pressure. Therefore, products containing PPA should be avoided in patients with hypertension (high blood pressure), heart disease, diabetes, kidney dysfunction, glaucoma or thyroid disease unless supervised by a physician Recommended doses should not be exceeded, and use should be discontinued if nervousness, dizziness, sleeplessness, rapid pulse or palpitations occur.

Caffeine is a central nervous stimulant often found in combination with PPA. Although such combination products may be effective for persons becoming fatigued while dieting, they should be avoided in most patients since the caffeine (as much as 100-200 mg per dose) will be additive to that found in foods such as coffee, tea and soda. Excessive caffeine intake (like PPA) is often associated with anxiety, nervousness, irritability and cardiovascular stimulation.

Products formulated as gums, lozenges or candies frequently contain the local anesthetic agent benzocaine, which appears to alter taste perception by decreasing the ability to detect degrees of sweetness. Examples of products containing benzocaine include Ayds Appetite Suppressant and Slim-Line. Side effects resulting from its use are rare in adults, but may include allergic sensitivity reactions. They are best taken just prior to meals.

Historically, many nonprescription appetite supressant products contained vitamins and bulk-forming compounds. However, the effectiveness and appropriateness of such formulations are still under consideration.[1]

It is important to emphasize again that the effectiveness of these products is related directly to appropriate modifications in diet, and that use should be limited to three months or less. Although they may be an effective adjunct to weight control, appropriate medical supervision and diet are essential to a proper weight control program.

References

1. Weight control drug products for over-the-counter human use; establishment of a monograph. Federal Register 1982;47:8466-8484

Fact Sheet on Nutritional Supplements

Jean B. Douglas, Pharm.D.

What do nutritional supplements do? Since the 1960s when the first astronauts were given food in liquid form while in space, we have found these liquid "space-age" diets useful as partial or total nutrition. When these nutritional formulas are used to boost the amount of calories and protein from regular table food, they are usually served over ice or as a milkshake and served during meal or snack time. Patients who cannot eat enough and look like they are losing weight may be asked to add a liquid diet to their other food. When the digestive tract needs a rest, a liquid diet may be used that is easy to digest during this time. These are usualiy given through a tube placed into the stomach or small intestine. By continuously running the diet through the tube into the stomach or small intestine, more calories with less fullness can usually be given.

What are nutritional supplements? Nutritional supplements are liquid diets which contain protein, sugar, fat, vitamins and minerals necessary to supply your body with energy to build new tissues, fight infection, and carry out bodily functions. There are several types of liquid diets available in drugstores and grocery stores. These are blenderized feedings, milk-base formulas, lactose-free formulas, and specially defined formulas which require no digestion.

Which nutritional supplements are usually available? Oral or tube supplements — These products contain all the components necessary to be labelled as a nutritionally complete diet. Those diets that contain milk will make patients who are allergic to milk feel sick. Patients who have a lactose deficiency should use only the diets that contain no lactose. The following diets will flow through regular feeding tubes, if proper instructions are followed.

Diet	**Calories/ Ounce**	**Available**	**Contains Lactose and Milk**	**Flavors**
Ensure	30	Ready to use		Choc., Van., Coffee, Strawberry, Eggnog and Blk. Walnut
Osmolite	30	Ready to Use		Unflavored
Isocal	30	Ready to Use		Unflavored
Sustacal	30	Ready to Use & Powder	(Powder contains lactose)	Van., Choc. & Eggnog
Citrotein	18	Powder		Orange & Grape
Meritene	30	Ready to Use & Powder	X	Van., Choc. & Eggnog
Carnation Instant Brk.	30	Powder	X	Van., Choc. & Strawberry
Ensure Plus	45	Ready to Use		Choc., Van., Eggnog & Strawberry

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From the Department of Pharmacy Services, Moses H. Cone Memorial Hospital, Greensboro, NC 27401.

Tube Feedings — These are blenderized, where meats, vegetables, etc. have been put in a blender and made into a liquid form. Patients should have normal digestion and these diets will flow through the larger tubes only.

Diet	Calories/ Ounce	Available	Contains Lactose and Milk	Flavors
Complete Modified	30	Ready to Use	X	Unflavored
Vitaneed	30	Ready to Use	X	Unflavored

Specially defined formulas have the protein in the form of amino acids or peptides which are easily absorbed. Carbohydrates and fats are usually in an easy to digest form, too. These are used if absorption is a problem as evidenced by diarrhea or special medical tests. These may be given by mouth, but are usually poured into a bag and run in by using a feeding tube.

Diet	Calories/ Ounce	Available	Contains Lactose and Milk	Flavors
Precision Products	30	Powder		Unflavored
Vivonex	30	Powder		Unflavored
Criticare HN	30	Ready to Use		Unflavored

How do I select a nutritional supplement?

Whether you or your physician selects a liquid diet for you, some of the things to consider include:

Balanced composition of protein, fats, sugar, etc.

Digestive tract function — if problems with absorption exist, the special defined diets are recommended.

Calorie ratio of 1 cal/ml or 1000 cal/quart.

Convenience and ease of administration (ready to use or to be mixed).

Taste and flavor (if taking by mouth).

Cost.

If you have questions, ask your health care provider for guidance in selecting a liquid diet.

What special information do I need?

1. *Follow rate* — Formulas should be given at the rate suggested by your health care provider. If you want to "boost" calories in your diet, begin by drinking several eight ounce glasses per day. If you drink or run them too fast, stomach cramps may develop.
2. *Vitamins/Minerals Included*
   Most of the diets already contain vitamins and minerals. If you take the amount recommended to supply all your vitamin needs, no additional vitamin pills are necessary. Ask what amount of diet will supply all the vitamins needed. For example, 2 quarts of Ensure contains 100% RDA (daily allowance) for vitamins.
3. *Sodium and Potassium Included*
   Some of these products contain less sodium and potassium than others. If you have been instructed to follow a low sodium diet, ask your physician or pharmacist which one has low sodium.
4. *Refrigeration*
   Once the can is opened or the diet mixed, place it (covered) in the refrigerator. Do not use any of the formulas after they have been opened/mixed for 24 hours.
5. *Mixing Instruction*
   If you need to mix the diet, a blender helps. Remember to clean all utensils before each use. Regular tap water may be used.
6. *Expiration Date*
   When buying these diets at a grocery store, check the expiration date marked on the can. This is usually printed on the label near a control number. It looks like this — "Mar 84." If you find a product that is older than the current date, do not use it.
7. *Check the Name Carefully*
   Sometimes the names can get confusing due to similarity in can color and name; Ensure is different from Ensure Plus.
8. *Tube Instructions*
   Your physician will give you instructions on taking care of your tube and how to give the diet through it. Follow these closely! If you notice a gurgling sound or have trouble breathing, check the tube position. If diarrhea and abdominal cramps occur, check rate of flow and reduce. If you have questions, call your health care provider.
9. *Drugs*
   Before crushing drugs and mixing them in the formula, ask your pharmacist if it is acceptable to do this. Some time-release tablets can't be crushed and some drugs stick to the sides of the tube. If you do put your drugs into the diet, be certain to mix well and rinse the container and tube thoroughly with water.
10. *Water*
    Even though you are drinking or receiving a liquid diet, it is wise to drink water too. For every quart of formula, try to drink one full glass of water. This will keep you from becoming dehydrated.
11. If you are taking your formula by tube, you may be given a *pump* which will keep the rate constant for you, *special bags* to put the diet in while it runs in and *specific instructions* to take care of the tube. Be certain to go over this with the nurse until you understand these instructions. If your physician feels you will need to receive continuous tube feedings with a pump at home, there are several companies that will rent you a pump. Your physician can arrange this for you.

What should I do if I have questions?

Ask for help from your physician, pharmacist, dietician or nurse. Remember these "space diets" have helped many people receive the food nutrients they need. Careful attention when following instructions is a must. If you have trouble finding the diet recommended for you, ask your pharmacist to order it for you.

Mites and Bites

Peter Heald, M.D., Claude S. Burton, M.D., and J. Lamar Callaway, M.D.

If a patient complains of itchy bumps the most likely diagnosis is insect bite. Virtually every study of the incidence of various dermatoses since 1687 (scabies mites were not discovered until 1687) has listed the bite of just one insect, scabies, as the third to fifth most common skin disease. Had all insect species been included in these surveys, then bug bites may well have been the most common skin disease. Our purpose is to clarify common misconceptions about these pests and offer our approach to therapy.

Scabies is the most common bug that infests man. Invisible to the naked eye, the affected patient is often unaware that mites are responsible for the rash that appears. In fact a diagnosis of scabies is often the last thing a patient expects or wants to hear. The thought of scabies conjures up notions of filth and reminds us of our place in the animal kingdom. However, the scabies mite has no respect for social class or financial status of whatever warm body it encounters.

The rash may appear year round and is often mistakenly diagnosed as drug eruption, food allergy, contact dermatitis, and the like. The famous dermatologist John Stokes remarked that scabies can be the easiest and most difficult rash to diagnose. Depending on the number of bugs involved, the duration of infestation, and the response of the host, the rash will vary considerably. The pregnant mite burrows her way through the upper layer of skin depositing ova and fecal material in her wake. After several days the host develops an allergy to these products and the rash appears along with intense pruritis. For some reason the itching is worst at night and this is a useful though not absolute clinical sign. To establish the diagnosis one needs to see mites, larvae, ova, or fecal material in scrapings from skin lesions. Since scratching and washing will remove this evidence, avoiding soap and water for three or four days will make the diagnosis easier to establish. In suspicious cases with negative scrapings (scabies incognito), empiric therapy is indicated.

There are several effective treatments. The Romans found hot sulfur spring baths useful. Topical sulfur (6% in petrolatum applied topically nightly for three nights) is still a safe though smelly and greasy approach to therapy. Lindane 1% lotion (Kwell) is the simplest, most effective approach and is the one we prefer. The lotion spreads easily into favorite scabies hideouts. Left on the skin for six hours, a single application is curative in about 90% of cases. A second application seven days after the first will insure success. Two ounces of the lotion are required for each individual to be treated. It is wise to prescribe enough medicine for all affected contacts. Lindane is toxic if used excessively or on babies with extensive rash. Patients should be cautioned to use only as prescribed. Since the itch will persist after the mites have been killed, there is often a tendency toward excessive application. Instead, topical steroid cream in mild cases or a short prednisone taper in severe ones will help with the itch (often referred to as the "mad itch").

Mites not on the body at the time of treatment quickly perish. Bugs in bed linens are destroyed by simple machine washing. Overzealous cleaning and extermination are unwarranted.

Keep in mind that all bites are not due to scabies. Kwell would be useless against bugs that bite and leave the body such as fleas, mosquitoes, and the like. For these pests an insect repellant such as Deet (diethyl toluamide) Muskol, Deep Woods Off, etc. would be more helpful. However, Kwell is effective in another common infestation — lice. As with scabies, several species of lice have evolved which depend on man for their survival. In fact separate species inhabit the pubic area ("crabs"), scalp, and body. Lice are bigger than scabies and can be seen without magnification. More commonly one notices the egg casings or nits attached to body hair or found in the seams of clothing. The treatment of lice is the same as mentioned for scabies except that since these parasites may live for a while off the body, more extensive household decontamination is often necessary.

Chiggers or redbugs deserve special mention. Since these rascals tend to bite in intertriginous areas and on the genitalia their bites are occasionally mistaken for the other parasites and vice versa. The bright red chigger larva is the only form that bites man. These pests are normally found in grasses and wooded areas. They catch a ride on passersby and crawl on the body until they find a suitable site or until their movement is inhibited by clothing. The insect injects a digestive chemical that is highly irritating and produces a vicious itch. The larva may stay in the wound several days depending on its appetite. Topical application of Kwell lotion or clear fingernail polish will destroy the mite though the itch may persist.

As you might imagine, mites are everywhere. Of the 30,000 species of mites and ticks about fifty will bite humans if their primary host is unavailable. Though the history may suggest which mite is responsible in a given patient, precise identification is unnecessary for treatment. Regardless of the species involved we find topical Topsyn gel the most effective form of local therapy. Applied three or four times a day this will alleviate the itch and embarrassment that may accompany the scratching.

For recurrent problems, the help of professional exterminators may be required. We once saw a woman with bites due to squirrel mites. Her attic was inhabited by a large squirrel population. In addition to treating her rash we arranged for the elimination of the squirrels followed by spraying the attic and house to eliminate the mites. The problem was solved until the squirrels found their way back into her attic several years later. Similar treatment was again effective.

From the Division of Dermatology, Duke University Medical Center, Durham, NC 27710.

Should the AMA Support an Indemnity System of Payment for Physicians' Services?

John Glasson, M.D.

THE North Carolina delegation to the American Medical Association in general reacted favorably to a report of the Council on Medical Service which recommends that the AMA give serious consideration to changing its policy in regard to payments for physicians' services. The usual and customary or reasonable fees would be replaced by an indemnity system, paying a set amount for the majority of services. Such a set amount would be determined by the payor itself on the basis of claims experience, public demand, negotiations with insured and other relevant factors.

The Council represents its synopsis of the situation as follows.

"Present Association policy, which supports freedom of patients to choose their source of care and freedom of physicians to choose their method of payment — including fee-for-service, capitation, or salary — continues to be appropriate.

"Within the fee-for-service approach, current AMA policy supports the basing of third party payment levels on the 'usual and customary or reasonable' concept, and the majority of private and public payors use the 'UCR' concept in establishing payment levels. However, the increasing costs resulting from this approach have caused both private and public payors to be caught between mounting pressure to constrain plan outlays on the one hand, and continuing customer demand for comprehensive coverage of physicians' services on the other.

"As one result, the 'reasonable charge' used by payors — particularly public payors — in determining payment levels no longer reflects the actual charges made by most physicians, because of infrequent updating of fee profiles, percentile cut-offs on customary charge data, and annual percentage caps on prevailing charge increases.

"In addition, pressure is increasing on physicians to accept the payor-determined reasonable charge as payment in full (except for allowed deductibles or coinsurance) — i.e., to become 'participating physicians.' Such pressure is exerted through:

> plan or company contracts which increasingly allow assignment of benefits or make payment only when services are provided by participating physicians;
> beneficiary misunderstanding of 'explanation of benefit' letters and resulting patient/physician friction;
> 'hold harmless' communications from payors to subscribers; and
> increased consideration nationally of mandatory assignment or fee schedules under Medicare.

"As these trends continue, patients will be increasingly restricted to 'participating' providers as a condition for insurance coverage. Eventually, physicians' remuneration will be determined solely by third party payors for the great majority, if not all, of the professional services they render — with what the Council believes will be a resulting inevitable mediocrity in the quality of medical care.

"Accordingly, the Council believes that the Association should seriously consider recommending that third parties change to an indemnity system of payment for physicians' services, i.e., paying a set amount for services rather than some proportion of the 'usual and customary or reasonable' charge. Such a set amount would be determined by the payor itself on the basis of claims experience, public demand, competition and other relevant factors.

"Such a change would benefit patients by:

> insuring their continued access to care not through external regulation of fees but through market forces;
> increasing both physicians' and patients' sensitivity to costs and quality of care provided;
> allowing them continued freedom of choice rather than being increasingly restricted to 'participating' providers as a condition of coverage, and facilitating understanding and comparison of insurance coverages.

"For third parties, rate determination would be simpler under an indemnity approach. Payors could establish premiums on the basis of prospective analysis of what the plan pays rather than on a statistical array of physician charges. Administrative costs should be significantly less. For government programs especially it provides an alternative which permits budgetary restraints without further restrictions on type or duration of services covered or massive increases in enrollee copayment.

"For physicians this approach could bring improved patient-physician interaction, since neither physician nor patient will have false expectations of the amount of third party payment. Uncoupling third party payment from physicians charges could act to reduce legislative and political pressure for mandating physician 'participation' as a condition of payment, and help preserve for physicians the freedom to charge what they believe to be a fair and equitable fee, subject only to normal and effective market constraints.

"The Council believes that a change of this import in

From 2609 N. Duke Street, Durham 27704.

Association policy should be considered carefully by this House with their constituents over the next six months. The Council will also continue its study, and will submit recommendations at the 1983 Interim Meeting.

"The only exception to use of an indemnity-based approach to payment levels would be in the type of 'catastrophic' coverage offered under both private and public payor programs where no further coinsurance or copayment is imposed once the beneficiary has spent a specified amount out-of-pocket. In order for such catastrophic coverage to provide meaningful protection to beneficiaries on the one hand and offer some degree of cost predictability to payors on the other, both the amount of patient spending allowed to count toward meeting the out-of-pocket spending limit and the amount of third party payments *in the catastrophic portion of their plans* should continue to be related in some way to the actual charges of physicians. To illustrate, if the plan were paying for physicians' services on an indemnity basis, the *entire difference between the indemnity payment and an individual physician's actual charge* — no matter how high — could theoretically be applied toward meeting the catastrophic threshold. In the Council's view, it would be more appropriate to allow only the difference between the indemnity payment and *physicians' customary charges* (or a certain percentile thereof) in the area to count toward the catastrophic threshold.

"By the same token, once the catastrophic threshold is reached, most insurance plans currently do not pay *all* additional expenses incurred for covered physicians' services, but rather at a percentile of physicians' customary charges for these services, but without imposing coinsurance on the beneficiary. If a plan paid on a *flat indemnity basis* above the catastrophic threshold, some patients could continue to have major out-of-pocket expenditures for physicians' services. On the other hand, payment for *all* costs of physician services above the catastrophic threshold could be extremely expensive for the plan. Accordingly, the Council believes it would be desirable for payors to continue to relate their payment for physicians' services to physicians' customary charges *in the catastrophic portion of their plans.*"

The Council asks and answers a number of questions regarding "usual and customary or reasonable" fees and indemnity:

"*Question* — If private and public payors were to change to paying for physicians' services on an indemnity basis, what would prevent such payors from then requiring physician acceptance of the *indemnity amount* as payment to a maximum fee schedule?

"*Answer* — For the Medicare program, first, requiring all physicians who treat Medicare patients to accept program reimbursement (whether a "UCR" or indemnity-based amount) as payment in full would require a change in the Medicare law. From the program's point of view, uncoupling payment levels from physicians' actual charges would reduce the need for such legislative change, since it would eliminate the continuing cost push on program spending exerted by UCR-based payment, and allow much more predictable budgeting. It is true that, if Medicare changed to an indemnity basis, beneficiaries would probably exert political pressure to prohibit balance billing by physicians. *However, they are already exerting such pressure because of the growing discrepancy between Medicare's 'reasonable charge' and physicians' actual charges.* In the Council's opinion, the only net political effect of changing Medicare to an indemnity basis would be to eliminate one of the important 'justifications' advanced for such mandated assignment and ban on balance-billing — the assertion that 'our payment is based on what most physicians charge anyway.'

"With regard to private payors, it should be remembered that what the Council is suggesting is a change to *indemnifying the patient* against health care expense; a contractual relationship would exist only between payor and subscriber, not between payor and physician. It could be a violation of the antitrust laws for service plans and commercial companies to market an indemnity plan which would pay only when the physician accepted the indemnity amount as full payment. As a practical matter, too, it would be difficult for such plans to survive in a competitive market, *since they could offer no assurance to subscribers of any reasonable level of access to covered services — that is, few physicians would be likely to commit themselves to accepting as full payment an amount no longer contractually tied to actual charging patterns.*

"*Question* — Since unions and consumer groups have exhibited a strong and continuing preference for comprehensive, service-type benefits, will changing to an indemnity system drive more of them out of the fee-for-service sector and into alternative, capitation-type systems?

"*Answer* — It is probable that the premiums for coverage under capitation-type systems will be generally *higher* than those for indemnity coverage under traditional insurance plans. A recent study by the Congressional Budget Office indicates that the average premium for HMO family coverage *now* is higher than that for traditional health insurance plans ($132/month for HMO coverage vs $104/month for all employment-based insurance). The tax law and other changes in the six AMA 'consumer choice' principles presently supported by AMA would reduce the attractiveness of such more expensive coverage.

"Even if premiums for the two types of coverage were comparable, a further shift to capitation-type programs should occur only to the degree that traditional systems are unable to compete on the basis of *either* price, or quality/accessibility. But if traditional fee-for-service medicine offers a better product, patients will still be willing to pay more for it.

"*Question* — If private and public payor levels are uncoupled from physicians' actual charges in an area, how would regional differences in cost be allowed for? In addition, would inflation act over time to make the indemnity allowances increasingly inadequate?

"*Answer* — For programs such as Medicare and national private health insurance accounts, the indemnity amounts could vary from one region to another based on cost-of-living differences. Market forces would act to insure that the indemnity amounts under private plans would be set at a reasonable and competitive level, and increased as economic conditions dictated. For Medicare, consumer and professional groups alike could continue their advocacy for reasonable and economy-indexed increases in indemnity payment levels, as they do now under the present reimbursement approach.

"*Question* — If the Medicare program paid for physicians' services on an indemnity basis, how would this affect Medicaid?

"*Answer* — A physician who treats a Medicaid patient and bills for his services is already required by law to accept the amount of the state agency's reimbursement as payment in full. Almost half the programs now pay on the basis of a fee schedule set by the state agency. Those states where payment is now the same as or a percentage of Medicare rates would have the option of establishing their own fee schedule or of keying payment to Medicare's new indemnity levels. To forestall even further reduction in access to care for beneficiaries in these latter states, consumer and professional groups would need to continue and perhaps intensify their advocacy for reasonable Medicaid payment levels.

"*Question* — Will the majority of physicians in fact be willing to now deal solely with the patient in fee matters, or will they continue to prefer to accept a lesser but 'guaranteed' payment from the third party?

"*Answer* — The Council believes this is a key question. The Council further believes that the majority of physicians will choose to make this change, if they perceive clearly the long-term adverse consequences of not doing so."

Dr. John Glasson, who headed the North Carolina delegation, asks that members of the North Carolina Medical Society discuss this issue and communicate additional views and comment to him or other AMA delegates. He will carry your thoughts to the next interim meeting of the AMA where some action will probably be taken on the Report of the Council on Medical Service.

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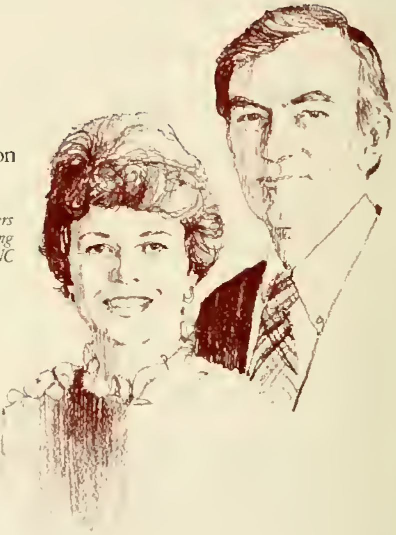

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Hospital Utilization Patterns in North Carolina: Implications for Cost of Care

Sandra B. Greene, Dr.P.H., and William J. DeMaria, M.D.

IN 1977 a Health Economics Research unit was established at Blue Cross and Blue Shield of North Carolina for the purpose of examining factors affecting health care expenditures. While the scope of its activities was to include both components of the equation, cost and utilization, it is the latter that became the first priority of the unit. It was reasoned that the study of costs has been the focus of attention from numerous sources and efforts in this area may be duplicative. However, the volume of services or utilization issues had not received as much consideration as warranted and could offer the greater potential for leading to the development of cost containment programs.

This decision to focus on utilization was, in part, predicated on observations of our way of life which portrays Americans as living in excess of need. This life-way, which includes demands of instant gratification and relief for all perceived needs, is conditioned early in life and promulgates an overuse and abuse of products relied upon in our daily lives. This wasteful behavior applied uniformly to almost all products and services has enhanced development of the major hazards to our personal health.

Unfortunately, the education and training of health professionals and the environment in which they are conducted provides no moderating influence upon this acquired behavior.

We believe these culturally conditioned life-ways and the current methods of training health professionals establish a basis for probable overuse of health care services. This is certainly suggested by the range in hospital utilization rates that is evident from one population group to the next. The most admirable rates, from a cost perspective, are often seen in HMO settings where the usual financial incentives are reversed and strong peer review is a prerequisite. Rates of 400-600 days/1000 persons are the norm in such settings. The more common levels of utilization rates, unfortunately, are 600-1000 days/1000 or higher in population groups under age 65 in fee-for-service settings.

In an effort to determine if inappropriate utilization of health care services is suspected in North Carolina, Blue Cross and Blue Shield of North Carolina has been studying hospital utilization rates of its subscribers and examining geographic patterns and variations in these rates. The purpose of this section of the presentation is to provide some of the findings from these studies.

It is pertinent to note that in 1981, there were 1,728,089 persons under age 65 in North Carolina with Blue Cross coverage, or approximately 33 percent of the total state population. BCBSNC is also the fiscal intermediary for Medicare Part A, covering another 765,000 residents. Blue Cross subscribers and Medicare eligibles combined account for 61 percent of the bed days in acute care hospitals in North Carolina each year. Consequently, BCBSNC has access to information on a large proportion of the hospital care provided in the state, presenting a unique opportunity to observe utilization patterns on a broad scale.

Methods

The Blue Cross claims system is designed for efficient processing and paying of claims. While utilization data are not readily accessible from this system, the Health Economics Research unit of BCBSNC has taken data from this system and reorganized it into usable data files for research. Claims related to the same hospitalizations have been grouped together to enable the identification of episodes of hospitalization. Then selected pieces of information related to the hospitalization have been extracted and put onto a condensed episode record. Critical pieces of information related to the patient and the providers, such as the patient's home zip code and the physician's specialty designation, are extracted from other BCBSNC data systems and matched to the appropriate episode record.

For hospitalizations occurring during each year, two episode files are created, one for BC subscribers and one for Medicare patients. Then for these population groups separately, hospitalization rates for each of NC's 100 counties are calculated. This annual rate is defined as the number of hospital days in acute care hospitals per 1,000 BC subscribers (or Medicare eligibles) residing in that county. The hospitalizations do not necessarily occur in that county. Thus, the rates are not hospital specific but rather are county specific. In addition to overall hospital day rates, disease specific county rates are also calculated for selected major disease categories based on the discharge diagnosis. ICDA diagnostic categories are used for this purpose.

In this manner, BCBSNC has calculated county specific hospital utilization statistics for three years, 1979-1981. Highlights of these findings for 1981 will be presented.

Findings

Figure 1 shows the 1981 BC hospitalization rates by county of residence. The statewide average is 818 days per 1,000 BC subscribers per year, and on a county basis the

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From Blue Cross and Blue Shield of North Carolina, P. O. Box 2291, Durham, NC 27702. Presented before the Duke University Eighth Private Sector Conference, March 1983.

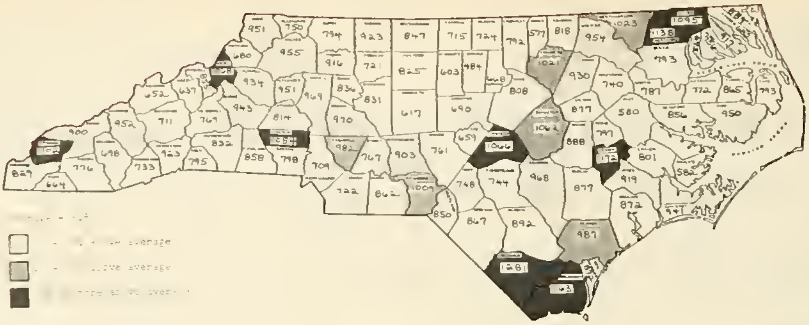

Figure 1. *Days per 1000 subscribers by county of residence. BCBSNC, 1981.*

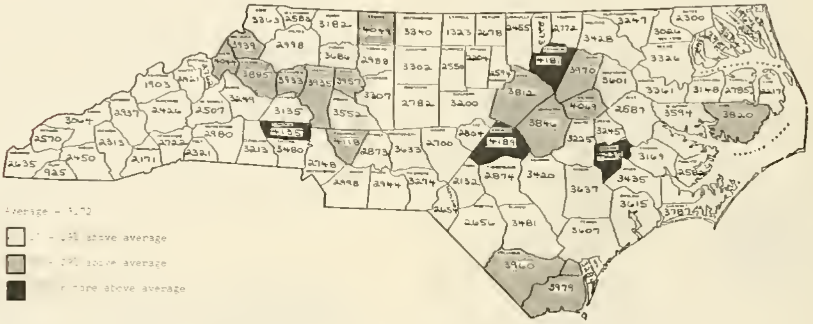

Figure 2. *Hospital days per 1000 Medicare eligibles by county of residence. Short term hospitals, 1981.*

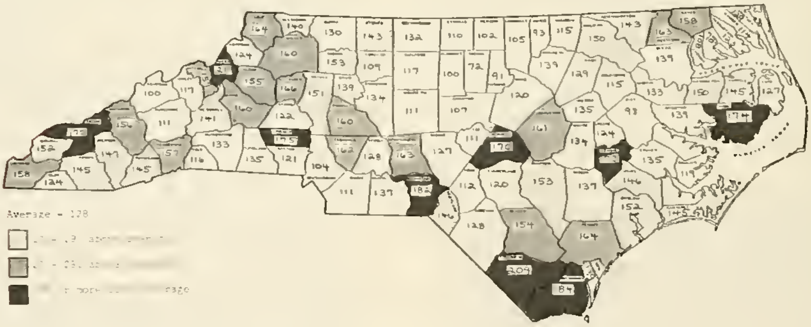

Figure 3. *Admissions per 1000 subscribers by county of residence. BCBSNC, 1981.*

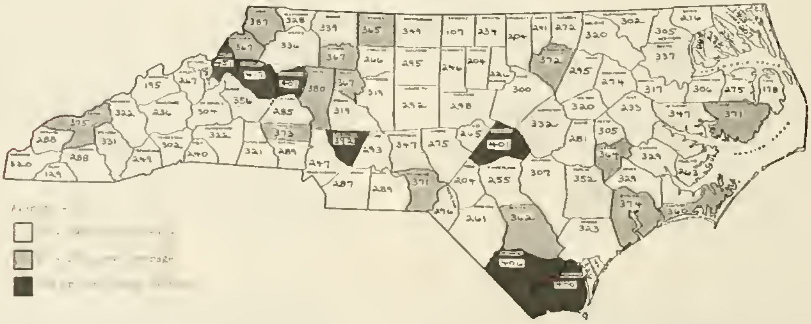

Figure 4. *Admissions per 1000 Medicare eligibles by county of residence, 1981.*

rates range from a low of 484 days in Orange County to a high of 1,281 days in Columbus County. The low utilization areas tend to coincide with the more urban areas, the locations of the major teaching institutions and the areas with higher concentrations of physicians. Counties with the highest rates tend to cluster in the midwest, southeast and scattered throughout the eastern regions of the state. Nine counties exhibit rates at least 30 percent above the statewide average.

Although comparisons are being made to the statewide average of 818 days, we should recognize that the average is inflated due to the presence of high utilization counties. To appreciate the full disparity in utilization patterns, our comparisons should be made with the low utilization counties rather than the average.

For the Medicare population the statewide average rate is 3,172 days, with a range from 925 in Clay County to 4,227 in Lenoir County (figure 2). There is a striking similarity in the utilization patterns of BC and Medicare patients, as exhibited by the two maps. The counties with high Medicare rates are clustered in the midwest, in the southeast, and several counties scattered throughout the east.

Figures 3 and 4 show admission rates per 1,000 persons by county of residence for both population groups. The range in rates across the state is similar to the patterns seen in the days/1000 maps. Consequently, it is evident that high utilization is associated with more frequent admissions rather than long lengths of stay.

Hospital admission rates per 10,000 population for respiratory disease averaged 105 for BC subscribers and 285 for the Medicare population (maps available upon request from BCBSNC). The county ranges for these rates are quite significant with the lowest rates in Orange County (48 for BC and 113 for Medicare) and the highest in Hyde County for BC (300) and in Avery County for Medicare (773). There is again a remarkable similarity in the patterns of utilization for these two population groups, as well as a similarity to the overall hospital utilization patterns shown in Figures 1 and 2.

County specific hospitalization rates for both populations have also been calculated for the following disease categories: circulatory, digestive, genitourinary, and neoplasms (data not shown). The results were similar for most disease categories, with generally the same counties exhibiting high rates regardless of the diagnosis.

Implications

We are encouraged to see that hospitalization rates of 400-600 days/1000 subscribers, comparable to HMO settings, currently exist in the fee-for-service setting in several counties of North Carolina. However, the cost implications of the higher utilization rates experienced in the remaining counties are enormous and affect both our subscribers and employers. For example, for our subscribers living in Harnett County who spend 62 percent more days in the hospital than our subscribers in neighboring Lee County, the high use translates into higher insurance premiums which both the employer and employee must pay. Thus, it is of more than passing interest to employer and insurer to understand the nature of the wide ranges in utilization.

In an attempt to determine the reasons for this variation in use of hospitals, research at BCBSNC shows, first of all, that there are a number of factors it is *not* due to. For instance, the demographic mix of the population from county to county does not play a role, nor is there any evidence of environmental or other factors resulting in "sicker" groups of subscribers in some counties. Variations in insurance coverage could not be a factor since the BCBSNC subscriber population has fairly comparable coverage statewide. Furthermore, Medicare coverage is strictly uniform throughout the state.

Several factors related to the variations in days/1000, however, have been observed. As the education level of consumers increases the hospital utilization decreases, although this factor explains only a small portion of the variation in days/1000. We have also found that utilization is related to the availability of physicians, as measured by the physician to population ratio. Counties with the highest concentration of physicians, such as those with teaching hospitals, have the lowest use of inpatient services. While it is difficult to measure, we suspect it is not simply the greater number of available physicians per se that relates to lower utilization, but rather the broader range of specialized services provided by this large M.D. population. Thus far, we have been unable to document how significant a force is exerted by consumer demand for hospital services. After examining as many potential correlates as feasible and the candid observations of physicians practicing in several of these higher utilization counties, we presently believe that much of the variation is associated with physician practice patterns.

Similar ranges in inpatient utilization rates have been documented elsewhere in the country, the most notable of these being Wennberg's findings in Vermont,[1] and the most recent study reported by Bognanni and Phillips in Iowa.[2] Preliminary findings from the North Carolina State Center for Health Statistics corroborate our data.

Application of Data

These data and implications were discussed initially with organized medical groups and selected faculty of two medical schools in North Carolina. Considerable interest was expressed by individuals but there was general reluctance to enter these high utilization counties with the type of studies necessary to identify origins of these alleged problems. If physician practice patterns were found to be a major factor, the education and motivation of providers required to effect change would probably arouse considerable apprehension and possibly frank hostility from some of the physicians. Similarly, if consumers' behavior were noted to be a significant factor, considerable resistance to voluntary change following an education attempt could be anticipated.

Discussions were also conducted with organized hospital administration groups and individual hospital administrators. Again, interest was expressed but no firm plan on how best to approach the high utilization counties was forthcoming. They also expressed concern for reactions of health care professionals and consumers. A general reluctance to commence with detailed analysis of selected counties was evident.

After our failure to stimulate action by the provider community, we then shared this information with selected business and industry executives. We discussed with them the possible causes for the wide range in medical care costs among their plants located in different counties of the state. In addition, we suggested methods that may aid resolution of inappropriate hospital utilization. Two distinct directions emerged from these deliberations.

1. Following their study of this information some of these business and industry leaders have joined together with professional providers to form business-medicine coalitions. Several of these groups are meeting to share concerns and explore ways of cooperatively reducing inappropriate utilization and controlling increases in health care costs.
2. In contrast to the cooperative coalition approach, other employers are responding to the utilization data in a more direct manner. Recognizing their own potential force in controlling inappropriate utilization, they are initiating major benefit changes and introducing cost containment programs, with minimal input from the provider community.

As an example of the latter we cite a textile plant in the western part of North Carolina, the major employer in the community. Through examination of their utilization experience, two major problems emerged. First, many of their employees were using an expensive for-profit hospital in their community, instead of the less costly community hospital. Both hospitals provide essentially the same level and quality of services. The second problem emerging from the data was a very high rate of inpatient utilization. This was evident in all major disease categories, both for employees and dependents alike. Faced with these two costly problems the employer asked for a redesigned benefit package and cost containment programs to target inappropriate utilization and promote appropriate utilization of the less costly hospital.

The new benefit program that was designed for this group and recently implemented, provides strong incentives for the use of outpatient services rather than inpatient. The package has a $200 deductible per admission with a sixty day renewal period. However, there is a 100 percent UCR payment not subject to deductibles for hospital and doctors' charges for outpatient treatment of accidental injury within seventy-two hours, outpatient treatment of medical emergencies within seventy-two hours, outpatient surgery and outpatient diagnostic services. To encourage use of the lower cost hospital, the inpatient deductible is only $100 for this preferred provider. In addition, to reduce inappropriate utilization we have developed a preadmission certification program for all admissions except emergencies and obstetrics. It is notable, however, that emergency and obstetric admissions are subject to retrospective review to ensure adherence to the medical necessity criteria for admission. The preadmission certification program requires for all planned admissions that the physician's office call the Plan's designated office for review of the admission. The specially trained nurses receive the information and as necessary consult with the Plan medical director or other medical consultants to derive an appropriate opinion regarding the admission review. The physician's office is notified of the decision. If the decision is not to certify the admission for reimbursement, the physician's office has the right to ask for another review. This is conducted with additional consultant physicians per telephone review. If the physician and patient agree to go ahead with the admission in spite of the denial for reimbursement, they both understand the reimbursement of charges must come from the patient. This program will also automatically enhance use of preadmission testing, ambulatory and office surgery and, in addition, decreased weekend admission.

While the cooperative coalition approach as described in the first example is showing signs of some progress in selected areas, the nature of this activity does not lend itself to quick solutions and immediate cost savings. Consequently, it is too early to predict the effectiveness of these efforts in North Carolina in reducing inappropriate utilization. As we at BCBSNC must continue to deliver large rate increases to our customers, employers are less willing to work patiently in coalition efforts for long range solutions. We expect that increasingly more employers will react individually, as did the textile firm cited, in making dramatic benefit changes, incorporating preferred provider arrangements, and introducing preadmission certification programs. BCBSNC is committed to assisting North Carolina employers in these efforts.

Summary

We have suggested that the American life-way and physician practice patterns comprise major forces in causing inappropriate utilization of hospital services.

We have generated data that enable us to focus upon the volume of services in addition to the cost of services. The data have demonstrated significant variations in the utilization of hospital based services among counties of North Carolina. Although we cannot document the effect of consumers' behavior in this situation, we believe the hospital use rates are primarily associated with physician practice patterns.

This information is being used to develop long range programs for business-medicine coalitions aimed at resolving some of the high medical cost issues. It is also providing the basis for major companies to effect immediate changes in their benefits programs which put brakes on inappropriate utilization of hospital based services.

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SOCIOECONOMIC ISSUES

The Impact of the New Medicare Law Upon the Practice of Medicine

Keith M. Korenchuk, J.D., M.P.H., C. Raymond Fernandez, M.D., and R. Gordon Senter, M.D.

ON April 19, 1983, President Reagan signed into law the "Social Security Rescue Plan" (H.R. 1900). Attached to this law is the most significant change in the Medicare system since its enactment in 1965. Under the new law, hospitals will be paid a flat fee for services they provide to Medicare patients rather than on the "cost basis" under which they have been reimbursed in the past. How most physicians are reimbursed under Medicare is not directly affected by this new law, but the relationship between hospitals and physicians will necessarily be quite different. The indirect changes in the way physicians practice, the questions raised about quality of patient care, and the likelihood that a change in physician reimbursement will soon occur, all make understanding this new law of vital concern to all physicians.

Several factors combined to convince Congress that changes needed to be made in the Medicare payment system. Health care in the United States now consumes nearly 11% of our total economic resources, and that percentage is increasing. The Federal Government's share is managed by the Health Care Financing Administration (HCFA) whose budget is greater than the total budget of 95% of the countries of the world! Also, the Medicare Trust Fund is projected to run out of money by 1988 at the present expenditure rate. The decision was made in Washington, DC that changes and reductions in Medicare should not be borne by the beneficiaries (the voters) as was done in the other Social Security amendments, but instead by those who provide the care.

The move for change in the reimbursement system under Medicare began in Congress only three months before the bill was passed. The speedy passage of prospective payment was assisted in part by the American Hospital Association which supported the legislation. This support was a response to the Tax Equity and Fiscal Responsibility Act (TEFRA) passed by Congress in 1982 which imposed significant spending cuts on the Medicare program. Seeing the rather onerous reimbursement limitations imposed by TEFRA, the hospital industry chose to support the less threatening prospective payment plan rather than the known limitations of TEFRA.

The Prospective Payment System for Hospitals

Under the new prospective payment plan which begins on October 1, 1983, a hospital will receive a lump sum payment for treatment given to a Medicare beneficiary. Initially, the system will apply only to inpatient services. The amount of payment will be determined by the discharge diagnosis. This amount is truly a "lump sum" payment and will not vary with length of stay, ancillary services provided, or severity of illness. Payment is made on the basis of 467 Diagnosis Related Groups (DRGs) which will be formulated by the Department of Health and Human Services. The payment will depend on the principal discharge diagnosis and can be modified by up to four additional diagnoses. According to Carolyne K. Davis, Administrator of HCFA, sixty DRGs comprise 64% of the dollar expenditures for the Medicare program; 197 DRGs comprise 90% of the total dollar outlays under Medicare.[1]

The prospective payment system will be phased in over a three-year period. A step-wise yearly increase in weight given the DRG relative to the old "cost based formula" will occur during the phase-in period, until in 1987 the DRG rate will cover the entire payment. The initial DRG rates will be regional in nature; by the end of the phase-in period, they will be entirely based on a national rate calculated separately for urban and rural hospitals.

Obviously certain patients require more services than others with the same diagnosis. These patients are termed "outliers" since they lie outside the averages. Under the Act, they may amount to only 5-6% of the Medicare patient population. Adjustments for these "outliers" cannot result in an increased amount of total reimbursement under Medicare. Thus the extra payments allowed for outliers will ultimately be deducted from the standard DRG fees. At present it is uncertain whether the outlier factor will be computed on a length of stay basis or on a dollar figure.

Not included in the DRG system are costs associated with medical education and with capital costs. Direct costs for medical education would continue to be passed through by hospitals on a "cost" basis, and the current payment to hospitals for indirect medical education expenses would be doubled. Capital costs, on the other hand, will continue to be based on a "reasonable cost" basis until October 1, 1986, at which time return on equity as a separate payment will be incorporated into the DRG structure.

Certain exceptions from coverage under the new law can be requested. Cancer, children's, long-term convalescent, and psychiatric hospitals may be granted relief. HMOs

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From Grier, Parker, Poe, Thompson, Bernstein, Gage & Preston, 1100 Cameron-Brown Building, Charlotte, NC 28204 (Mr. Korenchuk) and The Nalle Clinic, 1350 South Kings Drive, Charlotte, NC 28207 (Drs. Fernandez and Senter).

might be granted separate treatment under other conditions. A "sole community provider" might be allowed a waiver. None of these exceptions, however, is expected to include a large number of hospitals.

The biggest change brought about by the legislation is that hospitals are now "at risk" when a Medicare patient is admitted; that is, the hospital can no longer just pass its costs through to the government. Under the new system a hospital can lose money on a patient — or conversely, now can even make a profit on a particular patient.

The new system could create a tendency toward the marginal admission. The less ill the patient, the more profit will be entailed for the hospital, and the greater the tendency for the hospital to encourage such admissions. A "DRG creep" may work its way into the system. This would happen if those providing care sought to have the principal diagnosis be a DRG category that reimburses at a higher rate than another DRG category.

Certain hospitals might realize that they can make a profit on certain diagnostic groups. The temptation to encourage admissions of patients with certain diagnoses and the exclusion of certain other ("nonprofitable") ones could occur. Thus hospital "mills" could arise. In fact, H.R. 1900 recognized this potential and insisted that PROs (Professional Review Organizations) be contracted by each hospital that wishes to qualify for Medicare payments. These PROs among other things will have to monitor any changes in patterns of discharge diagnoses that might occur in the future. They will also have to prevent "premature discharges."

Two other shortcomings of the system may cause problems. First, the legislation does not adequately consider the severity of illness within each DRG. Also, a facility which transfers a patient to another institution will not be paid for care rendered to the patient. Payments will be made only upon discharge and will be paid to the hospital that discharges the patient.

Prospective Payment and Physicians

The impact of the new legislation on physicians is great. First, the legislation requires the Secretary of Health and Human Services to report by 1985 on the "advisability and feasibility of applying DRGs to physician charges for hospital services and to recommend legislation to apply DRGs to physicians." The original House bill included physicians' fees under the DRG system, but HCFA could not provide data to allow payments to physicians to be calculated. For this reason physicians' fees were not included. The capability to collect the data, however, is being reached and it will be mechanically easy in the future to place physicians under the DRG system.

Prospective payment will affect physicians in their relationships with hospital administrators. Hospitals will depend on receiving a fixed price for care provided. The new system will require physicians and hospitals to work closely together, or the hospital will be forced into bankruptcy. Consequently, hospital administrators will be even more concerned with physician practices in their institutions. Some system to decrease lengths of stay and to decrease use of ancillary services can be expected. Intensive discharge planning and nursing home referrals will take place. Certain existing patterns of physician referrals may be changed by "administrative pressures."

With the need for cooperation, however, will come the issue of how much control hospital administrators will have over a physician's practice. Some have predicted that hospitals will soon undertake the task of analyzing which physicians make money for the hospital and which do not. Legal questions regarding a hospital's ability to select the physicians on its staff will surely arise.

The Future

Congress seems intent now on "maintaining the solvency of the Social Security System." That translates into decreasing services, eligibility, or benefits (politically unlikely), or decreasing the cost of services purchased. In the past, the public demand has been for more and better health care. But now that the bill is presented, the demand is for lower costs. Quality of care is a paramount concern for providers, but the consumer assumes that a generic brand of medical care is quite adequate. In short, third party payors ask only "How much?" and never "How good?"

To view these changes on the positive side, one needs to ask where the *opportunities* seem to lie in this changing "marketplace." Clearly providing ambulatory services in an office or outpatient setting will be rewarded. Clinics, informal associations, and HMOs seem to offer economies of size and capital-availability that solo providers will be pushed to match. Various coalitions of businesses, hospitals, and physician groups will probably spring up. Competition over pricing will surely take on an importance not previously known to the profession. Sophistication as to how to "play by their rules" will become increasingly important as the regulations become even more complex. For example, physicians will have to learn which diagnoses pay better than others. The discharge summary might become the most important document physicians have to generate. The flexible practitioner who is most willing to change his practice patterns will be the one most able to profit from future adaptations that will be required.

Summary

The new Medicare law represents a radical departure from the status quo. If this experiment succeeds, other third party payors will likely follow suit. While physicians are not now included in the DRG system, it is likely that they soon will be. Hospital administrators will increasingly be more concerned with physicians' practice in their institutions. Cooperation will clearly be essential for the continued viability of many institutions and for the continued well being of patients. Yet this need for cooperation will not be without its tensions. In additon, maintaining *quality* of care under the new payment mechanism will be a challenge to all health care providers. Physicians and hospitals alike must be aware that Congress and business, who are the real payors for the vast majority of health care in this country, will be constantly seeking new ways to limit expenditures for medical care.

Reference

1. Remarks of Carolyne K. Davis at the Third Annual Congressional Forum of the American Group Practice Association, held in Washington, D.C., April 14, 1983.

Comment

Many of the problems physicians will face with prospective hospital payment for Medicare patients are well-presented in the above article.

A limited degree of this type of hospital cost containment and its effect on physicians has already been experienced in North Carolina.

Since July 1, 1982, NC Medicaid has limited hospital payments for Medicaid patients. The 131 hospitals of the state are divided into high-cost and low-cost categories. The average cost for a day's stay for a Medicaid patient was $262.00. Hospitals that charge less than this are reimbursed the full cost for an unlimited number of days. But the 28 higher-cost hospitals get reimbursed only for 85% of their patient days.

Since most hospitals do not have a high percentage of Medicaid patients or are in a low cost category, hospitals have generally not pressured physicians to move or change their practice patterns with Medicaid patients. Many hospitals have 30% to 60% Medicare patients.

The potential for severe financial losses by hospitals will force various pressures on physicians to "play the game" of DRGs. Not only the best interest of the patient but also quality of care will be compromised.

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The North Carolina Medicaid Physician Fee Schedule

P. A. Sellers, M.D.

THE first major fee schedule for North Carolina physicians was begun by North Carolina Medicaid in 1982. Several aspects of the fee schedule were not fully publicized at the time. Some of these have been explored by the North Carolina Society of Internal Medicine. The following questions and answers may clarify some of the issues for North Carolina physicians.

Question: What is the North Carolina Medicaid Fee Schedule?

Answer: The North Carolina Administrative Code 10-01-82 defines the physician fee schedule as follows:

(a) Statewide fees for physician services will be established by using the prevailing Medicaid file in effect on July 1, 1982.

(b) Fees for services other than surgeries performed in a hospital inpatient setting will be established as follows:

(1) Fees for services will be established using the 75th percentile of usual and customary charges for each specialty as identified in Medicaid's pricing file. Should there be a difference between urban and rural, the higher of the two will be used.

(2) Fees for primary care physicians will be set at 90 percent of the 75th percentile for services performed in a hospital inpatient setting, and at 100 percent of the 75th percentile for services performed in any other setting.

(3) Fees for specialists will be set at 90 percent of the 75th percentile.

(c) Fees for surgeries performed in an inpatient hospital setting will be established as follows:

(1) The specialty with the lowest fee and performing at least 10 percent of the surgeries will be used in establishing the inpatient fee.

(2) Fees for services will be established using the 75th percentile of usual and customary charges as identified in Medicaid's pricing file. Should there be a difference between urban and rural, the higher of the two will be used.

(3) Fees for all physicians will be established at 90 percent of the fee identified in (c) (1) and (2) of this rule.

(d) Primary care providers are defined as general practitioners, family practitioners, internists, obstetricians, gynecologists, and pediatricians.

Question: How was the fee schedule developed?

Answer: The fee concept was endorsed by the North Carolina General Assembly in June 1982. Work began on its development by the Department of Human Resources in August 1982. The prevailing fees used to construct the fee schedule were derived from physician charges made to Medicare and Medicaid in calendar year 1979. These fees were first used for pricing or payment by Medicaid in November 1980. The fee schedule became effective October 1, 1982 with first payments being made in mid November 1982.

A fee was generated for the vast majority of CPT 4 codes from 1979 physician profile charges. However, if a specialty had no profiles for a particular procedure code, a fee was generated using relative value units (measures of complexity) times conversion factors which set a dollar value for each unit for each specialty. This technique was used to price claims when insufficient billings were available to establish profiles.

Question: Is the Medicaid Fee Schedule a fixed or uniform payment schedule?

Answer: No, Medicaid pays the lower of the physician charge or the fee schedule payment.

Question: When and how often will the fee schedule be updated?

Answer: Annual increases will be linked to North Carolina legislative action. There are no plans to update the base at this time.

Question: Are "usual and customary" individual physician profiles to be maintained and used?

Answer: No. However, the information will still be available on North Carolina Medicaid computers, and can be obtained if indicated in the future.

Question: Are there differences in fees paid to physicians for similar services?

Answer: Fees vary from specialty to specialty except in the case of surgeries performed on hospitalized patients, where all specialties are paid the same amount.

Question: How many physician specialty profiles are there?

Answer: List of specialties:
General/Family Practice
General Surgery, Thoracic Surgery, Proctology
Allergy
Ear, Nose & Throat
Anesthesiology
Dermatology
Internal Medicine
Osteopathy

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Question: Are the dollar differences between specialty profiles very great?
Answer: Because the fees paid to the various specialties are based on the usual and customary physician profiles, the differences in fees among specialties stem directly from the billing practices of the different physician specialties. For example, fees for limited office visits vary from a high of $14.49 for neurologists to a low of $8.00 for ophthalmologists. GPs receive $11.40, internists $13.10, pediatricians $8.60, and OB/GYN $12.20 for a limited office visit.

Question: Are there significant differences between Medicare and Medicaid payments?
Answer: Medicaid payments cannot exceed Medicare payments for Medicare patients. In general, Medicaid payments are somewhat lower than Medicare. The Medicaid Fee Schedule is based on 1979 physician profile fees, whereas Medicare has annually updated physician profiles and payments. Differences also exist because Medicaid and Medicare use different coding systems. Medicaid is no longer required to follow Medicare's fees for physicians services.

Question: What coding system is best to use?
Answer: Medicaid accepts only AMA CPT-4. If the provider submits a different code it will be changed or returned. This will delay payment.

Question: How and when are codes deleted by Medicaid?
Answer: North Carolina Medicaid attempts to delete and add codes to their files when they receive updates to the AMA CPT-4 structure. At times these changes are delayed, but they attempt to stay current.

Question: How and when are codes added?
Answer: In addition to the AMA CPT-4 codes, Medicaid at times finds it necessary to create five digit codes for special services not in the AMA CPT-4 structure, or to indicate services that would be identified by five digit and two digit modifiers under the full CPT-4 structure (Medicaid computers cannot program 7 digit codes). They delete these codes when an appropriate AMA CPT-4 code is created. Physicians are informed through the Medicaid Provider Bulletin. Created nonuniform codes, however, make it very difficult for physicians to be consistent in their billing to several different insurance carriers.

Question: What per cent of physicians charges are paid by Medicaid?
Answer: Recently Medicaid has been paying about 65% of the physician charges.

Question: Can a physician obtain a copy of his fee schedule? If so, how?
Answer: Physicians can obtain a copy of the fee schedule for their specialty by sending their written request to Mr. Joseph Peters, Assistant Director for Program and Provider Services, 410 North Boylan Avenue, Raleigh, NC 27603. The charge for reproducing the fee schedule is $6.00 per copy.

Question: What are the positive and negative aspects of the Medicaid Fee Schedule?
Answer: Positive aspects:

1. Physicians receive payment for care of the poor.
2. Physicians know what they will be paid.
3. A generally uniform coding system is being used.
4. All physicians in a specialty are reimbursed the same. Newly enrolled physicians do not have to establish a profile in order to receive equal payments to established physicians.

Negative aspects:

1. Limited and relatively fixed physician fee payment.
2. Physician payments are significantly less than usual physician charges.
3. A fee system controlled by the legislative process.
4. Significant difference in payment for similar services between various specialties.
5. No built in system for fee increases with inflation.
6. Use of some nonuniform codes.

In general, the Medicaid Physician Fee Schedule gives some financial advantage to services performed by primary care physicians outside the hospital as compared with in-hospital services. Differences between urban and rural physician payments have been eliminated. However, physician payments for Medicaid patients have been fixed at 1979 physician fee levels with no prospect for change.

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The effectiveness of diazepam in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies. The physician should periodically reassess the usefulness of the drug for the individual patient.

Contraindications: Tablets or capsules in children under 6 months of age; known hypersensitivity; acute narrow angle glaucoma, may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: As with most CNS-acting drugs, caution against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving) Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation, usually limited to extended use and excessive doses Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months After extended therapy, gradually taper dosage. Keep addiction-prone individuals (drug addicts or alcoholics) under careful surveillance because of predisposition to habituation/dependence.

> **_Usage in Pregnancy_: Use of minor tranquilizers during first trimester should almost always be avoided because their use is rarely a matter of urgency and because of increased risk of congenital malformations, as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

ORAL Advise patients against simultaneous ingestion of alcohol and other CNS depressants.

Not of value in treatment of psychotic patients, should not be employed in lieu of appropriate treatment. When using oral forms adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increase in dosage of standard anticonvulsant medication, abrupt withdrawal in such cases may be associated with temporary increase in frequency and/or severity of seizures

INJECTABLE *To reduce the possibility of venous thrombosis, phlebitis, local irritation, swelling and, rarely, vascular impairment when used IV: inject slowly, taking at least one minute for each 5 mg (1 ml) given, do not use small veins, i.e., dorsum of hand or wrist, use extreme care to avoid intra-arterial administration or extravasation Do not mix or dilute with other solutions or drugs in syringe or infusion flask If it is not feasible to administer Injectable Valium directly IV, it may be injected slowly through the infusion tubing as close as possible to the vein insertion*

Administer with extreme care to elderly, very ill, those with limited pulmonary reserve because of possibility of apnea and/or cardiac arrest; concomitant use of barbiturates, alcohol or other CNS depressants increases depression with increased risk of apnea, have resuscitative facilities available. When used with narcotic analgesic eliminate or reduce narcotic dosage at least 1/3, administer in small increments. Should not be administered to patients in shock, coma, acute alcoholic intoxication with depression of vital signs

Has precipitated tonic status epilepticus in patients treated for petit mal status or petit mal variant status Not recommended for OB use.

Efficacy/safety not established in neonates (age 30 days or less), prolonged CNS depression observed In children, give slowly (up to 0.25 mg/kg over 3 minutes) to avoid apnea or prolonged somnolence; can be repeated after 15 to 30 minutes. If no relief after third administration, appropriate adjunctive therapy is recommended

Precautions: If combined with other psychotropics or anticonvulsants, carefully consider individual pharmacologic effects—particularly with known compounds which may potentiate action of diazepam, *i.e.*, phenothiazines, narcotics, barbiturates, MAO inhibitors and antidepressants Protective measures indicated in highly anxious patients with accompanying depression who may have suicidal tendencies Observe usual precautions in impaired hepatic function; avoid accumulation in patients with compromised kidney function Limit oral dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation (initially 2 to 2½ mg once or twice daily, increasing gradually as needed and tolerated)

The clearance of diazepam and certain other benzodiazepines can be delayed in association with Tagamet (cimetidine) administration. The clinical significance of this is unclear

INJECTABLE Although promptly controlled, seizures may return, readminister if necessary; not recommended for long-term maintenance therapy Laryngospasm/increased cough reflex are possible during peroral endoscopic procedures, use topical anesthetic, have necessary countermeasures available Hypotension or muscular weakness possible, particularly when used with narcotics, barbiturates or alcohol Use lower doses (2 to 5 mg) for elderly/debilitated

Adverse Reactions. Side effects most commonly reported were drowsiness, fatigue, ataxia Infrequently encountered were confusion, constipation, depression, diplopia, dysarthria, headache, hypotension, incontinence, jaundice, changes in libido, nausea, changes in salivation, skin rash, slurred speech, tremor, urinary retention, vertigo, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances and stimulation have been reported, should these occur, discontinue drug.

Because of isolated reports of neutropenia and jaundice, periodic blood counts, liver function tests advisable during long-term therapy Minor changes in EEG patterns, usually low-voltage fast activity, observed in patients during and after diazepam therapy are of no known significance

INJECTABLE Venous thrombosis/phlebitis at injection site, hypoactivity, syncope, bradycardia, cardiovascular collapse, nystagmus, urticaria, hiccups, neutropenia.

In peroral endoscopic procedures, coughing, depressed respiration, dyspnea, hyperventilation, laryngospasm/pain in throat or chest have been reported

Dosage: Individualize for maximum beneficial effect.

ORAL *Adults* Anxiety disorders, relief of symptoms of anxiety—Valium (diazepam/Roche) tablets, 2 to 10 mg b.i.d. to q.i.d., or 1 or 2 Valrelease capsules (15 t 30 mg) daily. Acute alcohol withdrawal—tablets, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d. or q.i.d. as needed; or 2 capsules (30 mg) the first 24 hours, then 1 capsule (15 mg) daily as needed Adjunctively in skeletal muscl spasm—tablets, 2 to 10 mg t.i.d. or q.i.d.; or 1 or 2 capsules (15 to 30 mg) once daily. Adjunctively in convulsive disorders—tablets, 2 to 10 mg b.i.d. to q.i.d.; or 1 or 2 capsules (15 to 30 mg) once daily.

Geriatric or debilitated patients: Tablets—2 to 2½ mg 1 or 2 times daily initially, increasing as needed and tolerated (see Precautions). Capsules—1 capsule (15 mg) daily when 5 mg oral Valium has been determined as the optimal daily dose.

Children Tablets—1 to 2½ mg t.i.d. or q.i.d. initially, increasing as needed and tolerated (not for use in children under 6 months). Capsules—1 capsule (15 m daily when 5 mg oral Valium has been determined as the optimal daily dose (n for use in children under 6 months)

INJECTABLE Usual initial dose in older children and adults is 2 to 20 mg I.M. or IV depending on indication and severity Larger doses may be required in some conditions (tetanus). In acute conditions injection may be repeated within 1 hour, although interval of 3 to 4 hours is usually satisfactory Lower doses (usually 2 to 5 mg) with slow dosage increase for elderly or debilitated patients and when sedative drugs are added (See Warnings and Adverse Reactions.)

For dosages in infants and children see below; have resuscitative facilities available

I.M. use: by deep injection into the muscle

IV use: inject slowly, take at least one minute for each 5 mg (1 ml) given Do not use small veins, i.e., dorsum of hand or wrist Use extreme care to avoid intra-arterial administration or extravasation Do not mix or dilute Valium with other solutions or drugs in syringe or infusion flask If it is not feasible to administer Valium directly IV, it may be injected slowly through the infusion tubing as close as possible to the vein insertion

Moderate anxiety disorders and symptoms of anxiety, 2 to 5 mg I.M. or IV, and severe anxiety disorders and symptoms of anxiety, 5 to 10 mg I.M. or IV, repeat in 3 to 4 hours if necessary; acute alcohol withdrawal, 10 mg I.M. or IV initially, then 5 to 10 mg in 3 to 4 hours if necessary. Muscle spasm, in adults, 5 to 10 mg I.M. or IV initially, then 5 to 10 mg in 3 to 4 hours if necessary (tetanus may require larger doses); in children *administer IV slowly*: for tetanus in infants over 30 days of age, 1 to 2 mg I.M. or IV, repeat every 3 to 4 hours if necessary in children 5 years or older, 5 to 10 mg repeated every 3 to 4 hours as needed Respiratory assistance should be available.

Status epilepticus, severe recurrent convulsive seizures (IV route preferred), 5 to 10 mg adult dose administered slowly, repeat at 10- to 15-minute intervals to 30 mg maximum. Repeat in 2 to 4 hours if necessary, keeping in mind possibility of residual active metabolites. Use caution in presence of chronic lung disease or unstable cardiovascular status Infants (over 30 days) and children (under 5 years), 0.2 to 0.5 mg slowly every 2 to 5 min., up to 5 mg (IV preferred). Children 5 years plus, 1 mg every 2 to 5 min., up to 10 mg (slow IV preferred); repeat in 2 to 4 hours if needed. EEG monitoring may be helpful

In endoscopic procedures, titrate IV dosage to desired sedative response, gen ally 10 mg or less but up to 20 mg (if narcotics are omitted) immediately prior procedure, if IV cannot be used, 5 to 10 mg I.M. approximately 30 minutes pri to procedure. As preoperative medication, 10 mg I.M., in cardioversion, 5 to 15 mg IV within 5 to 10 minutes prior to procedure Once acute symptomatol has been properly controlled with injectable form, patient may be placed on oral form if further treatment is required

Management of Overdosage: Manifestations include somnolence, confusion, coma, diminished reflexes. Monitor respiration, pulse, blood pressure, employ general supportive measures, IV fluids, adequate airway. Use levarterenol or metaraminol for hypotension Dialysis is of limited value.

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INJECTABLE Ampuls, 2 ml, boxes of 10; Vials, 10 ml, boxes of 1, Tel-E-Ject® (disposable syringes), 2 ml, boxes of 10. Each ml contains 5 mg diazepam, compounded with 40% propylene glycol, 10% ethyl alcohol, 5% sodium benzoate and benzoic acid as buffers, and 1.5% benzyl alcohol as preservative

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Mineral Springs and Medicine in North Carolina

W. Burns Jones, Jr., M.D., M.P.H.

THE mineral springs of North Carolina occupied a significant place in medical care, particularly in the nineteenth century. They were also highly popular resorts, and were enjoyed by most persons more for their social aspects than their healing properties. Nevertheless, mineral waters were widely utilized in the treatment of chronic and debilitating diseases. Medical texts were written on the qualities and use of springs, and testimonies to their effectiveness abounded. Springing from an ancient tradition, the medicinal use of spas (termed "balneology") was a serious subject to many physicians and occupied an important part of their practice.

Even before the coming of the colonists, mineral waters were utilized by the Indians. Hot Springs (Madison County) was known far and wide among the tribes for its curative powers. Indian Springs (Wayne County) was thought to have been used by the Saponi Tribe, and Rocky River Springs (Stanly County) was known to the Indians as the "Place of the Healing Waters." Roper Springs (Halifax County) and Vade Mecum (Stokes County) were other such native resorts. On the other hand, Barium Springs (Iredell County), which was developed as a spa in the 1880s, was called "Poison Springs" by the local Indians.[1]

Springs were of interest to the European settlers, who brought their quest for healing waters to the New World. John Lawson reports in his *History of North Carolina* (1714), "We have chalybeate waters of several Tastes and Different Quantities, some purge, others work by other Emunctories. We have among the Inhabitants, a water that is inwardly, a great apersive, and outwardly, cures Ulcers, Tetters and Sores by washing therewith."[2]

While mineral springs were employed by local residents from the early days of the colony, health resorts did not develop until the nineteenth century. At Warm Springs (now Hot Springs, in Madison County) a tavern was built around 1800 to accommodate travelers on the main trade route between North Carolina and Tennessee.[3] Lenox Castle (Rockingham County) by 1802 boasted springs, bath, tavern, and store.[4] By 1830, Jones' Sulphur Springs and Shocco Springs (both in Warren County), the State's most celebrated spas, were flourishing. Throughout the century other spas were created, and more than fifty mineral spring resorts can be identified in North Carolina with varying degrees of development and popularity.

Springs were rated by their principal qualities. Dr. George Walton, in his nineteenth-century book on American spas, classified them as alkaline, saline, sulphur, chalybeate (iron-containing), purgative, calcic, and thermal.[5] Jones' Springs in Warren County was sulphurous, while Chalybeate Springs in Harnett was named for its iron content. Hot Springs is one of the rare eastern thermal springs. Often a spa could boast of more than one type of spring on its premises. Glen Alpine Springs (Burke County) listed five: "The Temple Spring being the most distinguished . . . contains two forms of iron, magnesium, calcium, potassium, lithium, sodium, chlorine, hydrochloric acid, hydrosulphuric acid and carbonic gas." Spring Number Two is "ice cold; contains alum." Spring Number Three was described as "blue sulphur," and Numbers Four and Five contained iron and sulphur.[6] Seven Springs in Wayne County probably sets the record in the state for the most sources in one locale.

The chemical analysis of the water helped establish the medical credibility of a spa and could serve as a guide to appropriate use by physicians and patients. A brochure of Connelly Springs (Burke County) includes a statement by W. H. Taylor, M.D., State Chemist of Virginia, who opined: "The important constituent is bi-carbonate of iron, which is present in sufficient quantity to make this a valuable water, chalybeate water. It is my opinion this water will be found to be efficacious (sic) in a large number of diseases, especially in such as are accompanied with general disability."[7]

The waters were used internally and externally, often copiously. Baths were constructed, with hours designated for alternate use by men and women. The water was constantly available for drinking and was piped into the larger hotels.

Brochures published by the resorts often contained endorsements by physicians and patients. Correspondence from visitors to the springs also attested to their success. Mrs. Eliza Nelms Williams wrote from Moore's Springs (Stokes County), "My physitian (sic) said it would do me more good than all his medicine."[8] W. A. Smith reported from a North Carolina spa, "I am decidedly pleased with Cleveland Springs and I think I am doing well — Saturday night I ate intentionally a heavy supper and had cake and syrup and pastry to wind up with to test the capacity of digestion — And am glad to say suffered no inconvenience. The waters usually have a laxative effect on some more than others and they say just continue and that will be corrected of itself."[9]

Not all patrons were benefited, nor pleased with the results. Mrs. Mary Smith said of Rocky River Springs (Stanly County). " . . . the water had no effect on me(.) I eat more than is good for me." She goes on to report in another letter, "In this part of the world it continues to rain and can the water be any good with so much overflow —

From 2908 Wycliff Road, Raleigh, NC 27607.

but the people continue to come."[10] Former Governor Jonathon Worth visited Rockbridge Alum Springs in Virginia, but was dissatisfied: "Last night was a terrible one to me. My bowels was frightfully relaxed yesterday morning." He discontinued the water and used "Palliatives" instead.[11]

The action of mineral waters was debated, and various theories were proposed to explain their healing properties. Some even suggested that results were produced by electricity, magnetism, or a "Spirit of the Waters." Most practitioners, however, felt that the mineral constituents themselves (or the heat, in the case of thermal springs) changed the body's constitution. Dr. John Jennings Moorman described the action thusly:

> They seem to act, in the first place, as a simple hygienic agent. Secondly, they act, in accordance with their constitutional ingredients, specifically upon the mineral economy . . . they course through the system, and apply their medical materials which they hold in solution . . . to the diseased surfaces and tissues; they reach and search the most minute ramifications of the capillaries, and remove the morbid condition of those vessels, which are so commonly the primary seats of disease. It is thus that they relieve chronic disordered action, and impart natural energy and elasticity to vessels that have been distended either by inflammation or congestion; while they communicate an energy to muscle fiber and to the animal tissue generally which is not witnessed from the administration of ordinary remedies.[12]

Patients using the water experienced varying effects. Some springs were aperient, or laxative; others would increase urination. Some waters were held to be stimulating, others were claimed to have a sedative property. Thermal springs induced profuse perspiration. Whatever the result, users expected some physical consequence in order to feel that a proper benefit was obtained. Treatment was preferably extended over a period of time, often several weeks, and was accompanied by rest, recreation, good food, and moderate exercise.

The diseases for which mineral waters were prescribed were manifold, but were generally chronic conditions. Acute illnesses were not thought suitable for spa treatment. Often a spring's reputation would develop due to its successful use in a limited number of conditions; others were claimed to be beneficial in a wide variety of complaints (viz. "All-Healing" and "Panacea" Springs). Connally Springs was said to be "strongly diuretic and tonic, producing a voracious appetite, stimulating digestion and strengthening the nervous system. The large number of alkolies (sic) is the secret of its healing effects on diseases caused by Uric Acid in the human system, commonly known as the Uric Acid Diathesis — such as Gravel, Gout, Rheumatism, Inflammation of the Bladder, Painful Micturition, and Strictures and Affection of the Prostrate (sic) Gland, Etc. In cases of what physicians now call Mental Dyspepsia, Indigestion, and Derangement of the Nervous System, caused by an overworked brain, it is peculiarly happy in its effects. . . . It has been found to be an excellent remedy in Diabetis (sic)."[13] This appears in the spa's brochure and is followed by testimonials from North Carolina physicians citing successes with patients who had scrofula, dyspepsia, kidney and "versical" troubles, chronic malaria, anemia, debility, and other maladies. The properties of Hot Springs were held to be effective in "chronic rheumatism, gout, paralysis, dartrous skin diseases, and irritable conditions of the urinary bladder. They are also useful in certain cases of amenorrhea and dysmenorrhea."[14]

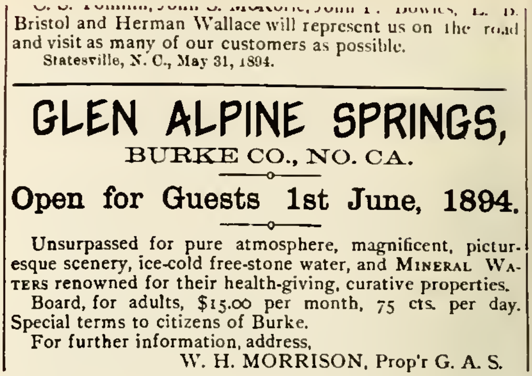

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Figure 1. *Advertisement for Glen Alpine Springs. Source: Division of Archives and History, N.C. Department of Cultural Resources. From* Morganton Herald, *June 14, 1894.*

One chronic disease for which mineral waters were not advised was tuberculosis. The "White Plague" reached its peak prevalence in the nineteenth century and became the leading cause of death in North Carolina as elsewhere. Climate and altitude played an important part in treatment, and Asheville and its environs became a mountain resort for consumptives. However, spas were not considered effective and most medical authorities cautioned against employing mineral waters in the therapy of tuberculosis. In North Carolina, spas were reluctant to accept tuberculous patients. A Connelly Springs brochure flatly states, "No consumptives taken." An exception was the nearby Glen Alpine Springs, which advocated the use of its waters in the treatment of "phthsis and pulmonary diseases (figure 1)."

Many resorts in the Piedmont and mountain areas were popular with persons seeking not only the waters but also a haven from the miasma of the coastal plain during the summer. An observer stated, "These swamps in hot and dry weather send forth a deadly and poisonous vapour, which produces sickness and death, and give a great part of the people a yellow, pale and death like countenance, which makes one shudder with horror."[15] Small wonder that people with leisure and money sought escape to more healthful regions. Often the entire family, including children and servants, would spend the summer at a resort, not returning home to the lowlands until the fall brought a respite from the heat and ague. The springs took full advantage of this reputation for salubriousness: Glen Alpine Springs proclaimed, "Malaria Don't Exist."

While health-seeking was the raison-d'etre for spas, the fashionable aspects of resorts predominated at many places. Large hotels were constructed, with spacious din-

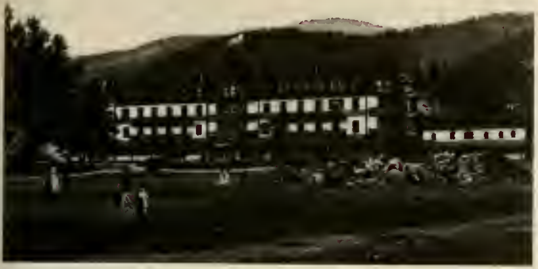

Figure 2. *The Hot Springs Hotel, Hot Springs, North Carolina, Ca. 1880. Source: Division of Archives and History, N.C. Dept. of Cultural Resources, Raleigh.*

ing halls, ballrooms, and airy verandas. The most popular watering places engaged orchestras and resident musicians, and organized social activities such as amateur theatricals. Horse racing and gambling could be found there as well. Unlike some of those in Virginia, North Carolina spas did not employ staff physicians. However, local doctors would be engaged as consultants to treat visitors when necessary and prescribe appropriate use of the waters.

Popularity of springs waxed and waned. Shocco and Jones' Springs near Warrenton had a national reputation during ante-bellum days; they were affected disastrously by the Civil War and closed soon after the conflict. Others, such as Panacea Springs (also in Warren County) and Shatley's Springs (Ashe County) were later establishments and enjoyed their heyday in the closing decades of the nineteenth century. Hot Springs was not only one of the first resorts, but also one of the longest lived; it continued to be used as a spa until the 1930s (figure 2). Overall, however, the prosperity of the springs generally declined after the turn of the century.

This decline can be explained by several factors. One is that the idea of long convalescences became unacceptable. Dr. Henry Sigerist attributes lack of sustained interest in balneology to this. He states, "American patients are anything but patient. They want to be 'fixed up' quickly. . . . Treatment at a health resort is an affair of several weeks, and such a lengthy treatment does not appeal to the average American patient."[16]

This impatience with prolonged therapy was a reflection of the stepped-up pace of American life. Planters, businessmen, and their families no longer had the leisure time afforded by a more relaxed age. The summer-long idyll at a watering place became a thing of the past.

The dawning of the modern age of medical science also contributed to the loss of interest. With advances in knowledge about causes of diseases and discovery of new methods of treatment, spa therapy had no place in twentieth-century American medicine. "Taking the waters" went the way of purgation and blood-letting.

Without the sanction of physicians, spas lost their principal justification for being. Changes in fashion were equally, if not more, important. Sea bathing became popular, for example, and the coast of North Carolina replaced spas as the attraction for throngs of vacationers. Watering places were no longer the resorts of fashionable society. Parties, dances, and picnics continued to be held at the springs, but these were local entertainments.

Balneology is currently practiced in other countries, such as Japan and some of the European nations. Mineral water treatment is still prescribed there, and while one might argue that any benefit is principally derived from rest and recreation to be found at a resort, spas such as Carlsbad are flourishing. In the United States, however, spa therapy is consigned to history.

Even today in this country, spring waters have their place in folk medicine, and many North Carolinians still drink the waters for their reputed "tonic" effect. Bottled mineral water, both imported and domestic, is enjoying a fad. But the watering place as a haven for the debilitated and chronically ill, and as a fashionable summer resort, has passed from the American scene.

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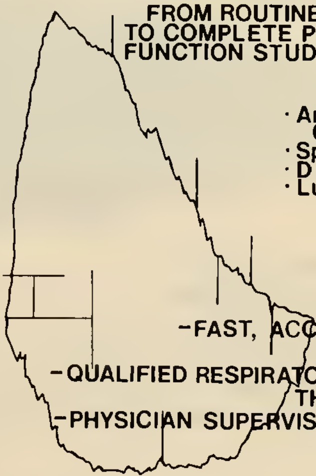

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THINGS MOST OF US DON'T KNOW

Aloe Vera, True and False

John H. Felts, M.D.

IN the world of the crossworld puzzle, certain words are invested with greater value than in other climates. These are usually short words, obscure, rich in vowels, which serve as connectors without which the puzzle couldn't be posed or completed. Where else can anoa (wild ox of the Celebes) or otoe (Plains Indian) have such standing? Although crossword puzzle dictionaries crammed with comparable gems can be readily acquired, the unregenerate afficionado won't have any truck with them any more than Archibald Cox would wear a ready-tied bow. One of those words treasured by the addict is aloe (rhymes with mallow), usually defined as a member of the lily family or as a medicinal plant.

But aloe is more than a crossword puzzle necessity. Because of its character, history and distinctive features it has brought into being the National Aloe Science Council, made up of 30 or so companies interested in exploiting its commercial properties.[1] More than 100 other companies offer items containing various products from the plant much to the benefit of South Texas, the source of most of the aloe grown in the United States. In fact, since 1979 acreage under cultivation has increased from 600 to 4,000 and crop value from $3.3 to $20 million. Most of us wouldn't recognize the plant face to leaf but many of our spouses have a few among their household plants and some even use the juice from the leaf, a gel, to ease the pain of a burn. In the field a mature leaf is about 2 feet long and weighs about 2 pounds. At the going rate of 11¢ to 15¢ a pound, household production offers no imminent threat to Texas.

Aloe Vera has been around a long time. Dioscorides, the father of floral pharmacy, described its rise in the Mediterranean world in the 1st Century AD and observed that it was so treasured as to be much counterfeited.[2] It was apparently used both internally and externally, primarily as a purgative and topically as a vermifuge. Mixed with honey and rubbed on the navel, it was alleged to expel worms. Nefertiti and Cleopatra are said to have appreciated its cosmetic properties and today such prestigious dispensers of the weapons of beauty as Yardley, Estee Lauder, Revlon and Avon are responsible for a parade of new products containing aloe in our drugstores, department stores and supermarkets.[1]

All these efforts lie in a great tradition. Nicholas Culpeper (1616-1654), astrological physician and outstandingly eminent charlatan, reported that aloe "is a martial plant, hot in the second degree, and dry in the third; of a very bitter taste" and that "it opens the belly and purges cold, phlegmatic, and choleric humours which overburden and hurt the stomach . . . boiled with wine and honey, it heals rifts and out-growings of the fundament" and on and on.[3] As recently as 1977, the *Handbook of Nonprescription Drugs* listed five surviving laxatives containing aloe or aloin, a mixture of crystalline principles derived from it. Survivors of dosing with Castoria and other laxatives for a daily "inside bath" will recognize among the five such classical preparations as Alophen Pills, Carter's Little Pills and Nature's Remedy.[4]

One of the most recent entrants in the aloe sweepstakes is stabilized aloe vera liquid with vitamins and minerals, available by the gallon as prepared by Lady Love Cosmetics, Inc., Addison, Texas 75001, but Lady Love specifically "does not make medical claims concerning this product," which is labelled as a food although it contains less than 3 calories per serving or maybe even per gallon. Lady Love further assures us that "great strides have been made today in producing the liquified gel of the aloe vera leaf in a pure and palatable form," and that its Lady Love Liquid Aloe Vera provides "a unique new concept and dimension for food and drink of a vegetable known and used for more than 3,000 years." Great prose that!

At any rate, we now have a unique new concept and dimension but since it takes three dimensions for measurement, the concept is yet to be tested. But short of irritating the bowel excessively on occasion, it appears, if we can trust the testimony of 30 centuries, quite a benign if somewhat overpriced concept.

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Venereal Warts Cause More Office and Public Clinic Visits Than Genital Herpes

THE June 17, 1983 Morbidity and Mortality Weekly Report of the Centers for Disease Control points out that in 1981 patients consulted office-based private physicians for condyloma acuminate (genital and venereal warts) on 946,000 occasions. This was three times the number of consultations requested for genital herpes. From 1966 to 1978, the number of consultations for condyloma increased 398% for males and 684% for females.

A limited study by CDC of visits to public clinics for sexually transmitted diseases supports the findings obtained from the national stratified random sample of patient consultations with physicians in fee-for-service office-based practice. For males, for every 100 visits, 4.3 cases of genital warts were diagnosed compared with 3.4 cases of genital herpes and 24 cases of gonorrhea. For every 100 visits by females, 4.0 cases of venereal warts were diagnosed, compared with 2.1 cases of genital herpes and 23.5 cases of gonorrhea.

Dental Enamel Erosion From Swimming Pool Acidity

DENTAL enamel erosion has been found in competitive swimmers who swam in pools five days or more per week. The editor of the Morbidity and Mortality Weekly Report of the Centers for Disease Control comments as follows in the July 22 issue:

"Large pools are sometimes chlorinated with chlorine gas (Cl_2), instead of hypochlorite, because of the economic advantages. Unlike hypochlorite, gas chlorination causes pool water to become acidic because chlorine gas reacts with water to form hydrochloric acid (HCl): $Cl_2 + H_2O \rightarrow HOCl + HCl$. Hypochlorous acid (HOCl) is the germicidal agent in chlorination; HCl is an unwanted byproduct. Excess acidity is commonly neutralized and buffered by the addition of soda ash.

"Tooth enamel does not decalcify in acidic solutions unless the pH is below 6.0. Even at a pH between 5 and 6, hours of cumulative exposure are required for clinically evident decalcification to occur. With proper buffering to maintain a recommended pool pH (pH 7.2-7.8), gas-chlorinated pools operate with a substantial margin of safety as regards enamel erosion. However, if a gas-chlorinated pool becomes inadequately buffered through the addition of inadequate quantities of soda ash, the pH may decrease rapidly — in one observed instance, from a pH of 7.4 to approximately 4.0 overnight.

"General enamel erosion has been observed among industrial workers exposed to acid fumes and among people consuming excessive quantities of acidic fruit, beverages, and medication. In 1980, an outbreak of enamel erosion similar to the present one was investigated at a gas-chlorinated public pool in New Jersey. The swimming pool water was epidemiologically implicated as the cause, but the mechanism could not be determined. In the present outbreak, the epidemiologic evidence showed that prolonged exposure to the pool water was associated with enamel erosion and that, on at least one occasion, the water was far below the recommended pH. These findings, plus the apparently inadequate maintenance practices, implicated the pool water as the cause of the enamel erosion.

"The American Public Health Association recommends that proper pool maintenance records be kept, including thrice-daily chlorine levels and pH readings, as well as the daily use of chlorine gas and soda ash. Since, with a standard phenol red indicator system (pH range 6.8-8.2), any pool water sample with a pH below 6.8 will read as pH 6.8, the person testing the water should take into account the accuracy of the colorimetric pH indicator. If the phenol red indicator shows pH 6.8, the pool should be promptly corrected to pH 7.2 or above and so verified."

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Mandala Center is . . .

A JCAH accredited 75 bed psychiatric hospital treating all categories of emotional and mental dysfunctioning.

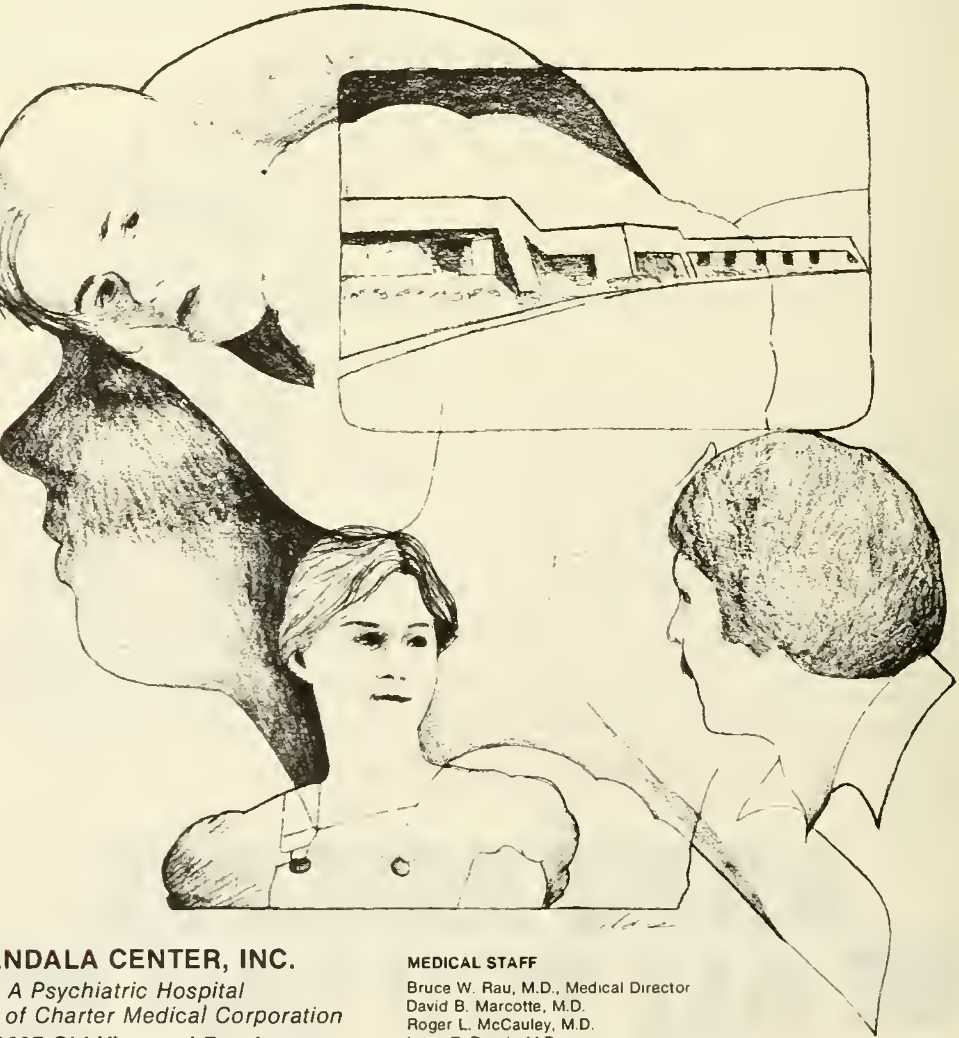
Three distinct programs are administered by multidisciplinary treatment teams under the direction of psychiatrists:

- Adolescent program — designed to bring about emotional growth and change in young people with emphasis on family therapy.
- Intensive treatment program — offering specialized, individualized treatment for more severely disturbed patients.
- Adult therapy program — a psycho-educational approach to treatment for adults experiencing a wide range of emotional problems.

Mandala Center Hospital and its new Activities Therapy Center are located on a fifteen acre suburban site in Winston-Salem.

Patients may be admitted upon referral by a physician or other professional. Evaluation and admission may be arranged through any member of the medical staff or by calling our admissions office.

A Place of Discovery and Recovery



MANDALA CENTER, INC.
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In vitro studies demonstrate

Bactericidal activity with minimal resistance

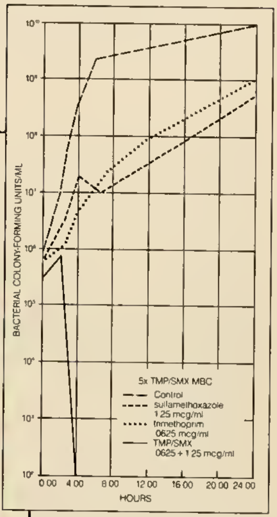
ROCHE

Percent of isolates of common uropathogens sensitive to BACTRIM and to other antimicrobials

	Escherichia coli	*Klebsiella pneumoniae*	*Proteus mirabilis*	*Proteus vulgaris*	*Proteus sp.*	*Enterobacter sp.*	*Enterobacter aerogenes*	*Enterobacter cloacae*
BACTRIM	**96%** 328,598	**89%** 63,551	**93%** 62,691	**84%** 4174	**91%** 4381	**88%** 1736	**96%** 7326	**92%** 11,856
ampicillin	72% 345,209	5% 65 466	85% 67,338	16% 4381	70% 4402	10% 1775	9% 7759	11% 12,091
cephalexin†	81% 343,339	85% 67,031	92% 67,027	16% 4398	80% 4365	22% 1834	13% 7571	12% 11,846
nitrofurantoin	97% 307,785	65% 61,162	7% 59,775	13% 3848	14% 3059	67% 1707	60% 7109	67% 10,830

†Analogous to cephalothin, the primary antibiotic disc used in testing.
Source: The Bacteriologic Report, BAC-DATA Medical Information Systems, Inc., Winter Series, 1981-82.
Numbers under percentages refer to the projected number of isolates tested.

RAPID *IN VITRO* DESTRUCTION OF *E. COLI* *



Kill curve kinetics of Bactrim and its individual components against *E. coli in vitro.*[1]

The bactericidal action of Bactrim has been demonstrated *in vitro* on laboratory strains of *E. coli*[1,2] and on clinical isolates of *E. coli, Klebsiella-Enterobacter, Proteus mirabilis* and *Morganella morganii*[3]—the most common causative organisms of urinary tract infections.[4] More than 100 published studies attest to the efficacy of Bactrim in recurrent urinary tract infections due to these organisms.[5] In comparative studies with other antimicrobials, Bactrim has consistently demonstrated unsurpassed efficacy during therapy.[6-11]

Resistance to Bactrim develops more slowly than to either of its components alone *in vitro.** Among urinary tract isolates, resistance has rarely emerged in susceptible strains.[5,12] Bactrim is contraindicated in pregnancy at term, during lactation, in infants less than two months old and in documented megaloblastic anemia due to folate deficiency.

Initial episodes of uncomplicated urinary infections should be treated with a single-agent antimicrobial.

Bactrim™ DS

(trimethoprim and sulfamethoxazole/Roche)

b.i.d. *for recurrent urinary tract infections*

**In vitro* data do not necessarily predict clinical results.

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See next page for references and a summary of product information.

References: 1. Data on file, Hoffmann-La Roche Inc., Nutley, NJ. 2. Kramer MJ, Maunz YR, Robertson TL, Timmes MD Morphological studies on the effect of subinhibitory and inhibitory doses of sulfamethoxazole-trimethoprim combination on *Escherichia coli*. Presented at the 12th International Congress of Chemotherapy, Florence, Italy, Jul 19-24, 1981 3. Spicehandler J *et al*: *Rev Infect Dis* 4:562-565, Mar-Apr 1982 4. Stamey TA. *Pathogenesis and Treatment of Urinary Tract Infections*. Baltimore, Williams & Wilkins, 1980, p 13 5. Ronald AR *Clin Ther* 3:176-189, Mar 1980. 6. Cooper J, Brumfitt W, Hamilton-Miller JMT. *J Antimicrob Chemother* 6:231-239, 1980 7. Gower PE, Tasker PRW: *Br Med J* 1:684-686, Mar 20, 1976 8. Cosgrove MD, Morrow JW: *J Urol* 111:670-672, May 1974 9. Iravani A *et al*: *Antimicrob Agents Chemother* 19:598-604, Apr 1981. 10. Schaeffer AJ, Flynn S, Jones J: *J Urol* 125:825-827, Jun 1981. 11. Rous SN *J Urol* 125:228-229, Feb 1981 12. BAC-DATA Medical Information Systems, Inc., Bacteriologic Reports, Winter Series, 1976-82

Bactrim™ DS

(trimethoprim and sulfamethoxazole/Roche)

Before prescribing, please consult complete product information, a summary of which follows:

Indications and Usage: For the treatment of urinary tract infections due to susceptible strains of the following organisms: *Escherichia coli, Klebsiella-Enterobacter, Proteus mirabilis, Proteus vulgaris, Proteus morganii.* It is recommended that initial episodes of uncomplicated urinary tract infections be treated with a single effective antibacterial agent rather than the combination. *Note.* The increasing frequency of resistant organisms limits the usefulness of all antibacterials, especially in these urinary tract infections

For acute otitis media in children due to susceptible strains of *Haemophilus influenzae* or *Streptococcus pneumoniae* when in physician's judgment it offers an advantage over other antimicrobials. To date, there are limited data on the safety of repeated use of Bactrim in children under two years of age. Bactrim is not indicated for prophylactic or prolonged administration in otitis media at any age.

For acute exacerbations of chronic bronchitis in adults due to susceptible strains of *Haemophilus influenzae* or *Streptococcus pneumoniae* when in physician's judgment it offers an advantage over a single antimicrobial agent.

For enteritis due to susceptible strains of *Shigella flexneri* and *Shigella sonnei* when antibacterial therapy is indicated.

Also for the treatment of documented *Pneumocystis carinii* pneumonitis.

Contraindications: Hypersensitivity to trimethoprim or sulfonamides; patients with documented megaloblastic anemia due to folate deficiency; pregnancy at term, nursing mothers because sulfonamides are excreted in human milk and may cause kernicterus; infants less than 2 months of age.

Warnings: BACTRIM SHOULD NOT BE USED TO TREAT STREPTOCOCCAL PHARYNGITIS. Clinical studies show that patients with group *A* β-hemolytic streptococcal tonsillopharyngitis have higher incidence of bacteriologic failure when treated with Bactrim than do those treated with penicillin. Deaths from hypersensitivity reactions, hepatocellular necrosis, agranulocytosis, aplastic anemia and other blood dyscrasias have been associated with sulfonamides Experience with trimethoprim is much more limited but occasional interference with hematopoiesis has been reported as well as an increased incidence of thrombopenia with purpura in elderly patients on certain diuretics, primarily thiazides Sore throat, fever, pallor, purpura or jaundice may be early signs of serious blood disorders Frequent CBC's are recommended; therapy should be discontinued if a significantly reduced count of any formed blood element is noted.

Precautions: *General*: Use cautiously in patients with impaired renal or hepatic function, possible folate deficiency, severe allergy or bronchial asthma In patients with glucose-6-phosphate dehydrogenase deficiency, hemolysis, frequently dose-related, may occur. During therapy, maintain adequate fluid intake and perform frequent urinalyses, with careful microscopic examination, and renal function tests, particularly where there is impaired renal function. Bactrim may prolong prothrombin time in those receiving warfarin, reassess coagulation time when administering Bactrim to these patients *Pregnancy*: Teratogenic Effects: Pregnancy Category C. Because trimethoprim and sulfamethoxazole may interfere with folic acid metabolism, use during pregnancy only if potential benefits justify the potential risk to the fetus.

Adverse Reactions: All major reactions to sulfonamides and trimethoprim are included, even if not reported with Bactrim. *Blood dyscrasias*: Agranulocytosis, aplastic anemia, megaloblastic anemia, thrombopenia, leukopenia, hemolytic anemia, purpura, hypoprothrombinemia and methemoglobinemia *Allergic reactions*: Erythema multiforme, Stevens-Johnson syndrome, generalized skin eruptions, epidermal necrolysis, urticaria, serum sickness, pruritus, exfoliative dermatitis, anaphylactoid reactions, periorbital edema, conjunctival and scleral injection, photosensitization, arthralgia and allergic myocarditis *Gastrointestinal reactions*. Glossitis, stomatitis, nausea, emesis, abdominal pains, hepatitis, hepatocellular necrosis, diarrhea, pseudomembranous colitis and pancreatitis *CNS reactions*: Headache, peripheral neuritis, mental depression, convulsions, ataxia, hallucinations, tinnitus, vertigo, insomnia, apathy, fatigue, muscle weakness and nervousness. *Miscellaneous reactions*: Drug fever, chills, toxic nephrosis with oliguria and anuria, periarteritis nodosa and L E. phenomenon. Due to certain chemical similarities to some goitrogens, diuretics (acetazolamide, thiazides) and oral hypoglycemic agents, sulfonamides have caused rare instances of goiter production, diuresis and hypoglycemia in patients; cross-sensitivity with these agents may exist In rats, long-term therapy with sulfonamides has produced thyroid malignancies

Dosage: *Not recommended for infants less than two months of age.*

URINARY TRACT INFECTIONS AND SHIGELLOSIS IN ADULTS AND CHILDREN, AND ACUTE OTITIS MEDIA IN CHILDREN.

Adults: Usual adult dosage for urinary tract infections—1 DS tablet (double strength), 2 tablets (single strength) or 4 teasp (20 ml) b.i.d for 10-14 days Use identical daily dosage for 5 days for shigellosis.

Children: Recommended dosage for children with urinary tract infections or acute otitis media—8 mg/kg trimethoprim and 40 mg/kg sulfamethoxazole per 24 hours, in two divided doses for 10 days. Use identical daily dosage for 5 days for shigellosis

For patients with renal impairment: Use recommended dosage regimen when creatinine clearance is above 30 ml/min. If creatinine clearance is between 15 and 30 ml/min, use one-half the usual regimen. Bactrim is not recommended if creatinine clearance is below 15 ml/min.

ACUTE EXACERBATIONS OF CHRONIC BRONCHITIS IN ADULTS:

Usual adult dosage: 1 DS tablet (double strength), 2 tablets (single strength) or 4 teasp (20 ml) b.i.d. for 14 days

PNEUMOCYSTIS CARINII PNEUMONITIS:

Recommended dosage 20 mg/kg trimethoprim and 100 mg/kg sulfamethoxazole per 24 hours in equal doses every 6 hours for 14 days See complete product information for suggested children's dosage table

Supplied: *Double Strength (DS) tablets*, each containing 160 mg trimethoprim and 800 mg sulfamethoxazole, bottles of 100 and 500; Tel-E-Dose® packages of 100; Prescription Paks of 20 *Tablets*, each containing 80 mg trimethoprim and 400 mg sulfamethoxazole—bottles of 100 and 500; Tel-E-Dose® packages of 100, Prescription Paks of 40 *Pediatric Suspension*, containing 40 mg trimethoprim and 200 mg sulfamethoxazole per teaspoonful (5 ml); cherry flavored—bottles of 100 ml and 16 oz (1 pint) *Suspension*, containing 40 mg trimethoprim and 200 mg sulfamethoxazole per tea spoonful (5 ml); fruit-licorice flavored—bottles of 16 oz (1 pint)

ROCHE®
ROCHE LABORATORIES
Division of Hoffmann-La Roche Inc.
Nutley, New Jersey 07110

References

1. Stone PH, Turi ZG, Muller JE Efficacy of nifedipine therapy for refractory angina pectoris *Am Heart J* 104 672-681, September 1982
2. Antman E, Muller J, Goldberg S, et al: Nifedipine therapy for coronary-artery spasm Experience in 127 patients *N Engl J Med* 302 1269-1273, June 5, 1980

BRIEF SUMMARY
PROCARDIA® (nifedipine) **CAPSULES** For Oral Use

INDICATIONS AND USAGE. I. Vasospastic Angina. PROCARDIA (nifedipine) is indicated for the management of vasospastic angina confirmed by any of the following criteria 1) classical pattern of angina at rest accompanied by ST segment elevation, 2) angina or coronary artery spasm provoked by ergonovine or 3) angiographically demonstrated coronary artery spasm In those patients who have had angiography the presence of significant fixed obstructive disease is not incompatible with the diagnosis of vasospastic angina, provided that the above criteria are satisfied PROCARDIA may also be used where the clinical presentation suggests a possible vasospastic component but where vasospasm has not been confirmed, e g where pain has a variable threshold on exertion or in unstable angina where electrocardiographic findings are compatible with intermittent vasospasm, or when angina is refractory to nitrates and or adequate doses of beta blockers

II. Chronic Stable Angina (Classical Effort-Associated Angina): PROCARDIA is indicated for the management of chronic stable angina (effort-associated angina) without evidence of vasospasm in patients who remain symptomatic despite adequate doses of beta blockers and/or organic nitrates or who cannot tolerate those agents

In chronic stable angina (effort-associated angina) PROCARDIA has been effective in controlled trials of up to eight weeks duration in reducing angina frequency and increasing exercise tolerance, but confirmation of sustained effectiveness and evaluation of long-term safety in those patients are incomplete

Controlled studies in small numbers of patients suggest concomitant use of PROCARDIA and beta blocking agents may be beneficial in patients with chronic stable angina, but available information is not sufficient to predict with confidence the effects of concurrent treatment, especially in patients with compromised left ventricular function or cardiac conduction abnormalities When introducing such concomitant therapy care must be taken to monitor blood pressure closely since severe hypotension can occur from the combined effects of the drugs (See Warnings)

CONTRAINDICATIONS: Known hypersensitivity reaction to PROCARDIA

WARNINGS: Excessive Hypotension: Although in most patients, the hypotensive effect of PROCARDIA is modest and well tolerated, occasional patients have had excessive and poorly tolerated hypotension These responses have usually occurred during initial titration or at the time of subsequent upward dosage adjustment, and may be more likely in patients on concomitant beta blockers

Severe hypotension and/or increased fluid volume requirements have been reported in patients receiving PROCARDIA together with a beta blocking agent who underwent coronary artery bypass surgery using high dose fentanyl anesthesia The interaction with high dose fentanyl appears to be due to the combination of PROCARDIA and a beta blocker but the possibility that it may occur with PROCARDIA alone, with low doses of fentanyl, in other surgical procedures or with other narcotic analgesics cannot be ruled out In PROCARDIA treated patients where surgery using high dose fentanyl anesthesia is contemplated, the physician should be aware of these potential problems and if the patient's condition permits, sufficient time (at least 36 hours) should be allowed for PROCARDIA to be washed out of the body prior to surgery

Increased Angina: Occasional patients have developed well documented increased frequency duration or severity of angina on starting PROCARDIA or at the time of dosage increases The mechanism of this response is not established but could result from decreased coronary perfusion associated with decreased diastolic pressure with increased heart rate or from increased demand resulting from increased heart rate alone

Beta Blocker Withdrawal: Patients recently withdrawn from beta blockers may develop a withdrawal syndrome with increased angina, probably related to increased sensitivity to catecholamines Initiation of PROCARDIA treatment will not prevent this occurrence and might be expected to exacerbate it by provoking reflex catecholamine release There have been occasional reports of increased angina in a setting of beta blocker withdrawal and PROCARDIA initiation It is important to taper beta blockers if possible rather than stopping them abruptly before beginning PROCARDIA

Congestive Heart Failure: Rarely patients, usually receiving a beta blocker, have developed heart failure after beginning PROCARDIA Patients with tight aortic stenosis may be at greater risk for such an event

PRECAUTIONS: General: Hypotension: Because PROCARDIA decreases peripheral vascular resistance, careful monitoring of blood pressure during the initial administration and titration of PROCARDIA is suggested Close observation is especially recommended for patients already taking medications that are known to lower blood pressure (See Warnings)

Peripheral edema: Mild to moderate peripheral edema, typically associated with arterial vasodilation and not due to left ventricular dysfunction, occurs in about one in ten patients treated with PROCARDIA This edema occurs primarily in the lower extremities and usually responds to diuretic therapy With patients whose angina is complicated by congestive heart failure, care should be taken to differentiate this peripheral edema from the effects of increasing left ventricular dysfunction

Drug interactions: Beta-adrenergic blocking agents (See Indications and Warnings) Experience in over 1400 patients in a non-comparative clinical trial has shown that concomitant administration of PROCARDIA and beta-blocking agents is usually well tolerated but there have been occasional literature reports suggesting that the combination may increase the likelihood of congestive heart failure, severe hypotension or exacerbation of angina

Long-acting nitrates PROCARDIA may be safely co-administered with nitrates, but there have been no controlled studies to evaluate the antianginal effectiveness of this combination

Digitalis Administration of PROCARDIA with digoxin increased digoxin levels in nine of twelve normal volunteers The average increase was 45% Another investigator found no increase in digoxin levels in thirteen patients with coronary artery disease In an uncontrolled study of over two hundred patients with congestive heart failure during which digoxin blood levels were not measured, digitalis toxicity was not observed Since there have been isolated reports of patients with elevated digoxin levels, it is recommended that digoxin levels be monitored when initiating adjusting, and discontinuing PROCARDIA to avoid possible over- or under-digitalization

Carcinogenesis mutagenesis, impairment of fertility When given to rats prior to mating, nifedipine caused reduced fertility at a dose approximately 30 times the maximum recommended human dose

Pregnancy Category C Please see full prescribing information with reference to teratogenicity in rats embryotoxicity in rats, mice and rabbits, and abnormalities in monkeys

ADVERSE REACTIONS: The most common adverse events include dizziness or light-headedness, peripheral edema nausea weakness headache and flushing each occurring in about 10% of patients, transient hypotension in about 5%, palpitation in about 2% and syncope in about 0 5% Syncopal episodes did not recur with reduction in the dose of PROCARDIA or concomitant antianginal medication Additionally the following have been reported muscle cramps, nervousness, dyspnea nasal and chest congestion, diarrhea constipation, inflammation, joint stiffness, shakiness, sleep disturbances blurred vision, difficulties in balance dermatitis pruritus urticaria, fever, sweating, chills, and sexual difficulties Very rarely introduction of PROCARDIA therapy was associated with an increase in anginal pain possibly due to associated hypotension

In addition more serious adverse events were observed, not readily distinguishable from the natural history of the disease in these patients It remains possible however, that some or many of these events were drug related Myocardial infarction occurred in about 4% of patients and congestive heart failure or pulmonary edema in about 2% Ventricular arrhythmias or conduction disturbances each occurred in fewer than 0 5% of patients

Laboratory Tests: Rare mild to moderate transient elevations of enzymes such as alkaline phosphatase, CPK, LDH, SGOT, and SGPT have been noted and a single incident of significantly elevated transaminases and alkaline phosphatase was seen in a patient with a history of gall bladder disease after about eleven months of nifedipine therapy The relationship to PROCARDIA therapy is uncertain These laboratory abnormalities have rarely been associated with clinical symptoms Cholestasis possibly due to PROCARDIA therapy has been reported twice in the extensive world literature

HOW SUPPLIED Each orange soft gelatin PROCARDIA CAPSULE contains 10 mg of nifedipine PROCARDIA CAPSULES are supplied in bottles of 100 (NDC 0069-2600-66) 300 (NDC 0069-2600-72) and unit dose (10x10) (NDC 0069-2600-41) The capsules should be protected from light and moisture and stored at controlled room temperature 59° to 77°F (15° to 25°C) in the manufacturer's original container

More detailed professional information available on request © 1982 Pfizer Inc

Pfizer **LABORATORIES DIVISION**
PFIZER INC

"I can do things that I couldn't do for 3 yrs. including joining the human race again."

Quotes from an unsolicited letter received by Pfizer from an angina patient.
While this patient's experience is representative of many unsolicited comments received, not all patients will respond to Procardia nor will they all respond to the same degree.

© 1983 Pfizer Inc

"My daily routine consisted of sitting in my chair trying to stay alive."

"My doctor switched me to PROCARDIA[*] as soon as it became available. The change in my condition is remarkable."

"I shop, cook and can plant flowers again."

"I have been able to do volunteer work...and feel needed and useful once again."

PROCARDIA can mean the return to a more normal life for your patients—having fewer anginal attacks,[1] taking fewer nitroglycerin tablets,[2] doing more, and being more productive once again.

Side effects are usually mild (most frequently reported are dizziness or lightheadedness, peripheral edema, nausea, weakness, headache and flushing, each occurring in about 10% of patients, transient hypotension in about 5%, palpitation in about 2% and syncope in about 0.5%).

for the varied faces of angina

PROCARDIA®
(NIFEDIPINE) *Capsules 10 mg*

*Procardia is indicated for the management of:
1) Confirmed vasospastic angina
2) Angina where the clinical presentation suggests a possible vasospastic component.
3) Chronic stable angina without evidence of vasospasm in patients who remain symptomatic despite adequate doses of beta blockers and/or nitrates or who cannot tolerate these agents. In chronic stable angina (effort-associated angina) PROCARDIA has been effective in controlled trials of up to eight weeks' duration in reducing angina frequency and increasing exercise tolerance, but confirmation of sustained effectiveness and evaluation of long-term safety in these patients are incomplete.

Please see PROCARDIA *brief summary on adjoining page.*

Motrin®
ibuprofen, Upjohn
600 mg Tablets

More convenient for your patients

Upjohn

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J-9043-8 July 1981

Bulletin Board

Continuing Medical Education

Please note: 1. The Continuing Medical Education Programs at Bowman Gray, Duke, East Carolina and UNC Schools of Medicine, Dorothea Dix, and Burroughs Wellcome Company are accredited by the American Medical Association. Therefore CME programs sponsored or cosponsored by these schools automatically qualify for AMA Category I credit toward the AMA's Physician Recognition Award, and for North Carolina Medical Society Category A credit. Where AAFP credit has been obtained, this also is indicated.

IN STATE

October 7-8
"Ocular Surface — Contact Lens Symposium"
Place: Atlantic Beach
Info: Carol Vilas, Box 3802, Duke University Medical Center, Durham, NC 27710

October 7-8
"Hand Rehabilitation: Surgical and Therapeutic Principles"
Place: Wilmington
Fee: $100.00
Credit: 10 hours Category I AMA
Info: Susan Keys, Wilmington AHEC, 2131 South 17th Street, Wilmington, NC 28401. 919/343-0161

October 13-14
"Rehabilitation Conference — ACS"
Place: Raleigh
Fee: $25.00
Info: Harriet Flint, American Cancer Society, 222 N. Person Street, Raleigh, NC 27611. 919/834-8463

October 14-15
"Davison Club Weekend"
Place: Durham
Info: Janet Sanfilippo, Box 3407, Duke University Medical Center, Durham, NC 27710. 919/684-6347

October 17
"Records and Other Necessities"
Place: Boone
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

October 17-19
"Malpractice Loss Prevention"
Place: Chapel Hill
Info: Judith Carter 919/966-4032

October 18
"Malpractice Awareness — Stat"
Place: Asheville
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

October 19
"Cerebrovascular Accidents, Acute Care and Rehabilitation"
Place: Sanford
Credit: 2 hours Category I AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

October 26
"Records and Other Necessities"
Place: Pinehurst
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

November 3-4
"Current Topics in Urology"
Place: Chapel Hill
Fee: 125.00
Credit: 11 hours Category I AMA
Info: Barbara Judd, 428 Burnett-Womack Bldg. 229H, UNC School of Medicine, Chapel Hill, NC 27514. 919/966-2571

November 9
"Records and Other Necessities"
Place: High Point
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27661. 919/828-9334

November 15
"Records and Other Necessities"
Place: Wingate
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

November 10-12
"Medical Alumni Weekend"
Place: Durham
Info: Janet Sanfilippo, Box 3407, Duke University Medical Center, Durham, NC 27710. 919/684-6347

November 16
"Antibiotics and Infectious Disease"
Place: Sanford
Credit: 3.5 hours Category I
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

November 29
"Records and Other Necessities"
Place: Wilmington
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

November 30-December 3
"35th Annual Scientific Assembly"
Place: Greensboro
Credit: 16 hours AAFP
Info: NC Academy of Family Physicians, Box 20146, Raleigh, NC 27619. 919/781-6467

December 6
"Duke Tuesday"
Place: Durham
Info: Linda Mace, Box 3707, Duke University Medical Center, Durham, NC 27710. 919/684-2033

December 8-10
"Pediatric Imaging Seminar"
Place: Winston-Salem
Credit: 20 hours Category I AMA
Info: Postgraduate Course in Medical Sonics, 300 S. Hawthorne Road, Winston-Salem, NC 27103. 919/748-4505

December 21
"Obstetrical Analgesia"
Place: Sanford
Credit: 2 hours Category I
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

OUT OF STATE

October 20-23
"NCSIM Fall Meeting"
Place: Hilton Head, SC
Info: Kathy Adams, Box 27167, Raleigh NC 27611. 919/833-3836

North Carolina Names in the News

Dr. Robert L. Bloomfield and **Dr. E. Ted Chandler** have written and published a book entitled *Mnemonics Rhetoric and Poetics for Medics*. They have constructed memory aids to cover a wide variety of situations — diseases of the kidneys, gastrointestinal tract, lungs, heart, joints, skin, nervous system, and blood. They give the ABCs of lead poisoning as follows: A is anemia; B, basophilic stippling; C, colic; D, dementia; E, encephalopathy; F, foot drop; and G, gingival. The authors convey the idea that writing mnemonics is fun in addition to being useful. What's more, anyone who sends in a useful mnemonic covering a new area will receive a free copy of the next edition. The book is published by the authors and costs $9.50. Address orders to them at the Department of Internal Medicine, Bowman Gray School of Medicine, Winston-Salem 27103.

Dr. Bryant L. Galusha, Director of Medical Education at Charlotte Memorial Hospital and Medical Center, was elected to a two-year term of membership on the Executive Board of the National Board of Medical Examiners at their Annual Meeting on March 25.

The 1983 Abraham Jacobi Memorial Award, presented to a pediatrician whose career is dedicated to the highest levels of patient care, teaching and clinical research, has been awarded to **Dr. Jay M. Arena** of Duke University Medical Center. The Jacobi Award was established in 1962 by the American Medical Association in honor of the founder of pediatrics in America.

Announcement of a Trial in Process

Members of the Departments of Medicine, Surgery and the Division of Radiation Oncology at the University of North Carolina are conducting a trial of a combination of radiation and chemotherapy in locally advanced pancreatic carcinoma. Patients with histologically proven or strongly suspected adenocarcinoma of the pancreas, that are under 70 years of age and are ambulatory would be eligible for this trial. These patients would have an evaluation consisting of a CT scan and arteriogram, as well as other appropriate studies to assess the resectability of their pancreatic carcinoma. If the tumor appears localized but unresectable by non-invasive studies, they would receive external radiation followed by surgical exploration and, if the tumor is unresectable, implantation of radioactive iodine seeds. They would then receive further radiation and, following a rest period, would be placed on chemotherapy for an indefinite period as long as the tumor showed no evidence of progression.

Trials to date using similar techniques have suggested improved survival. The patients would be billed for their care as would any other patient with pancreatic carcinoma who is being evaluated and treated.

If you have a patient you feel might be an appropriate candidate for the study please contact one of the physicians listed below for evaluation of the patient.

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JULIAN G. ROSENMAN, M.D.
Department of Radiology (Radiation/Oncology)
919/966-1101

NC Medical Auxiliary

Carol J. Hayes

Tarheel Tandem, publication of the North Carolina Medical Society Auxiliary, was named the best newsletter in the country for its category at the National AMA-Auxiliary Convention June 19-22 at the Drake Hotel in Chicago. Constance Parker, Wilmington, editor of the paper, which is published three times a year, accepted the award.

Mrs. Parker was one of nine delegates and five alternates from the North Carolina Auxiliary who attended the convention. Eleanor Hunt, immediate past president, presented a report to the convention highlighting accomplishments of state auxilians during the year. Marguerite Tracy, Charlotte, new president, was introduced to the 344 delegates attending from across the nation.

Senator Nancy Landon Kassebaum was keynote speaker on the major issues facing health care providers. Other featured speakers during the meeting were Shana Alexander, journalist, commentator, and author, who spoke on women's legal rights. Her speech centered around the injustice of Jean Harris' trial and punishment about which she has written extensively.

Former Ambassador John Volpe, Chairman of the Presidential Commission on Drunk Driving, spoke on the concerns of that group. Since drinking is the nation's largest single health hazard, Ambassador Volpe stated that drinking and driving must become socially unacceptable. He commended the Auxiliary for passage of a drunk driving resolution in its house of delegates.

Nancy Poeske, M.D., Director of Undergraduate Studies and Professor, Department of Psychiatry, Indiana University School of Medicine, spoke at the seminar on "The Social History of Women." She traced the effect on the family of the changing roles of men and women with its attendant stress and the need for support groups to help families cope with their problems.

All of the speakers emphasized the need for the Medical Auxiliary to continue its promotion of healthy lifestyles through health related projects and legislative action. Auxilians were encouraged to become involved in debate and better informed about medical issues.

Through AMA-ERF, American Medical Association Education and Research Foundation, Auxilians helped raise 1.8 million dollars in the past year in unrestricted funds for use of medical schools. North Carolina was fifteenth highest state in the nation with total contributions of $29,863.35.

Letters to the Editor

A Final Note on AIDS

Readers may be interested in knowing the volume and geographic distribution of the letters we received in response to Rev. G. R. Selby's editorial on "AIDS and the Moral Law" (NCMJ 44:275-276, 1983). Twelve letters were received, of which four were from North Carolina (one each from Durham, Chapel Hill, Randleman, and Winston-Salem), three from New York City, two from San Francisco, and one each from East Lansing, Michigan; Washington, D.C.; and Portland, Oregon. Sex still seems to be a matter of some interest.

The Editor's Lament

The following extract was published in the July 1983 issue of the *Rhode Island Medical Journal:*

> The editor can run an efficient office, he can publish a journal on time, he can accept or reject material quickly, he can help with advertising and business management. But the editor can publish only the material that he receives. He is at the mercy of the members of the Society. If they write, he can publish; if they do not, he perishes.

Eugene A. Stead, Jr., MD
Editor
North Carolina Medical Journal

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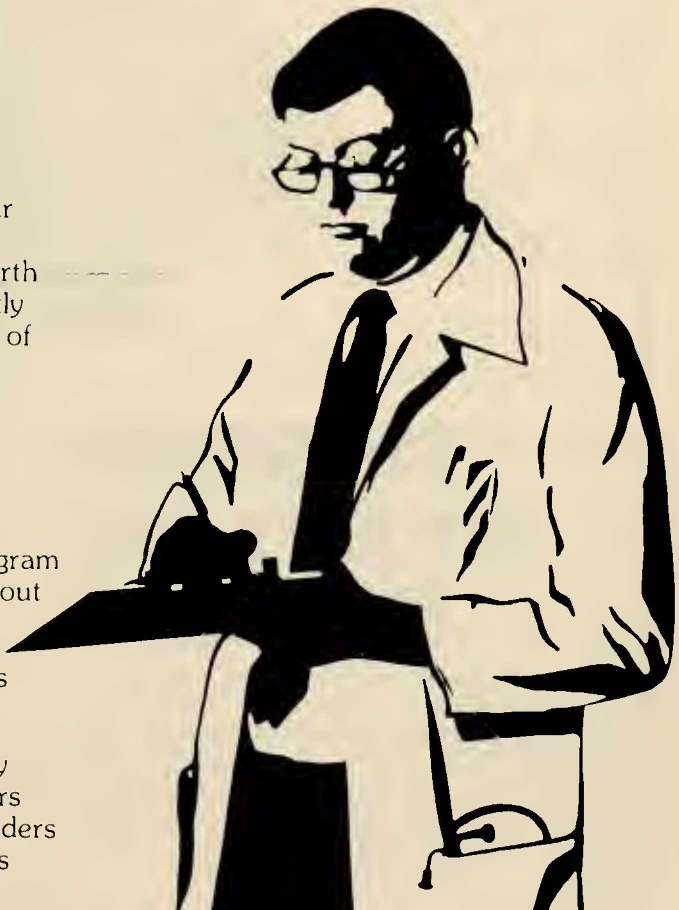

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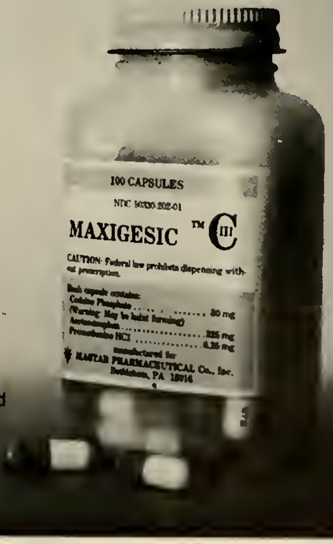

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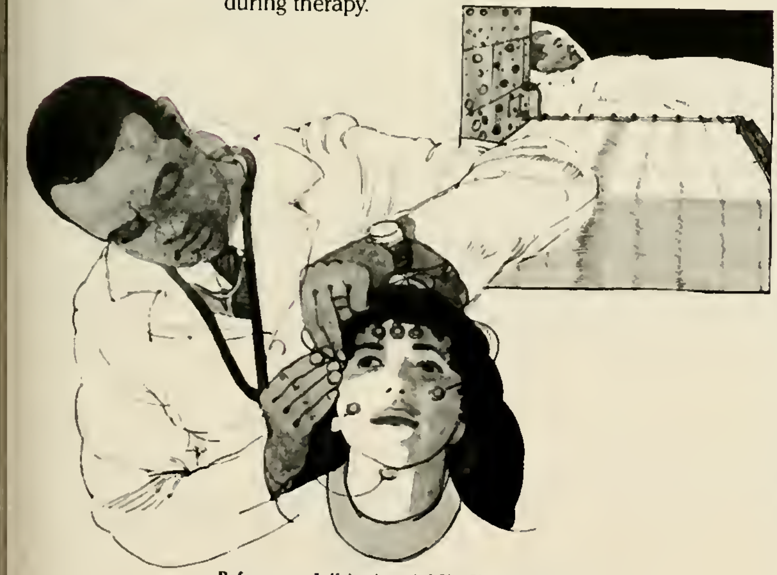

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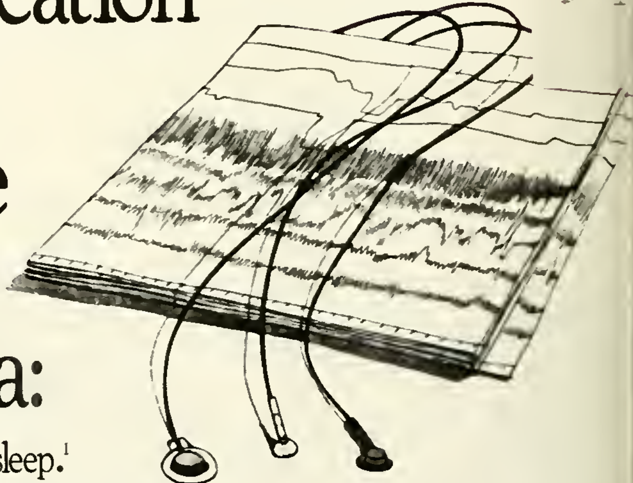

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October 1983, Volume 44, No. 10

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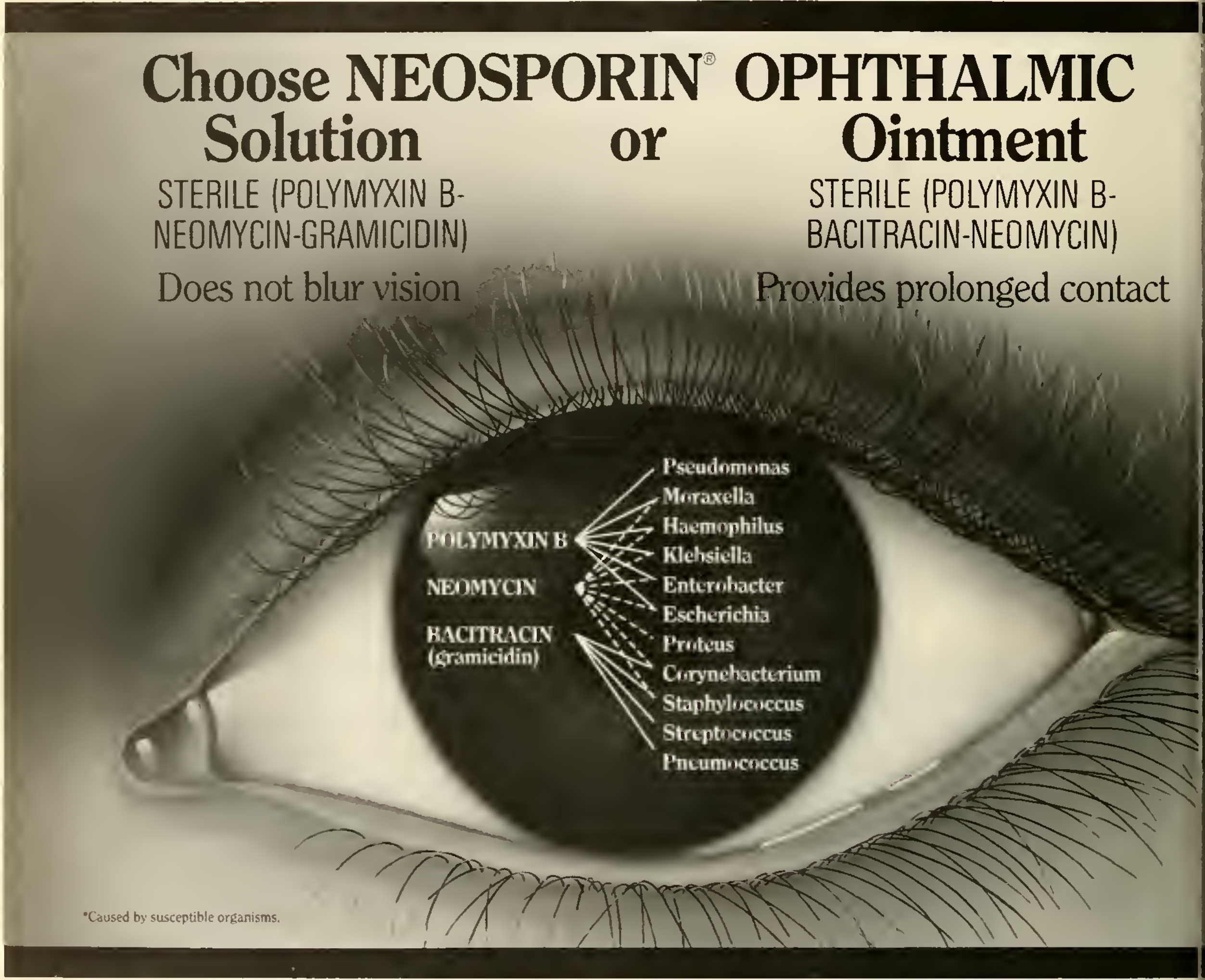

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volume 44, no. 10, October 1983

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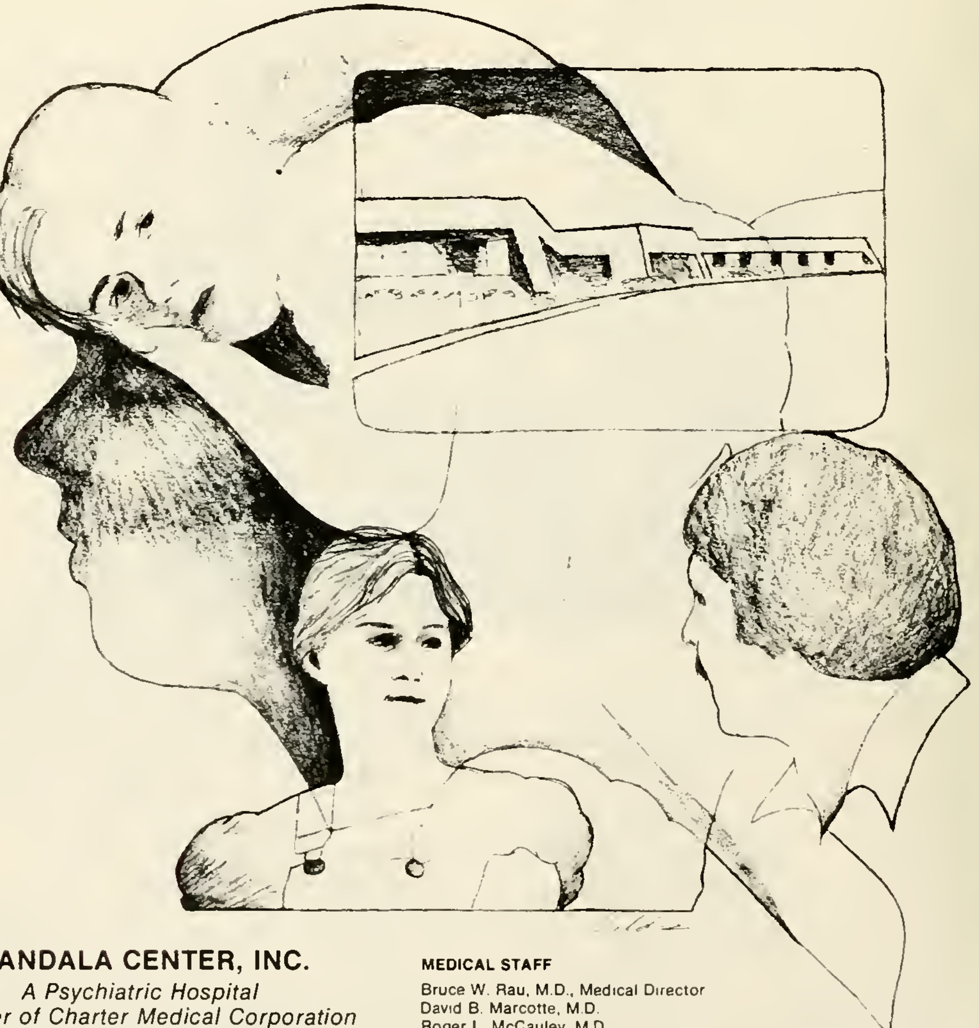

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A NOTE FROM THE EDITOR

I am trying various formats for the *Journal*. In this issue, the concentration is on the eye. Should future issues be devoted to other themes?

Eugene A. Stead, Jr., M.D.

EDITORIAL

The Use of the Fundus to Demonstrate the Complexity of Communications

Eugene A. Stead, Jr., M.D.

As Dr. Eifrig points out in his letter to the editor (page 681), I have had a long-time interest in the examination of the fundus with the ophthalmoscope. I early learned that you can make more detailed observations through a dilated pupil than through a small pupil. Movement of the eye allows the macular and the peripheral fundus to be visualized more easily. Changes in visibility of the blood in the arteries and veins and changes in caliber of vessels are detected much more frequently by using Eifrig's method of following each vessel from the fundus to the periphery.

I have often used the fundus to demonstrate the difficulty in communication. A word creates in my brain a picture. I never know how the picture formed in my brain or how it relates to that formed in another brain unless each of us can project the brain pictures so that similarities and differences can be detected by ourselves and others. The very considerable differences that can occur in the brain images of the same object are well demonstrated by asking the two observers of a fundus to exteriorize their brain images by drawing a picture of the fundus.

I always ask the resident whether he has drawn the fundus as it is or as it is not. From experience I know that he has drawn it as it is not. After considerable effort, he can form an accurate picture of the fundus in his brain and exteriorize this picture on paper.

We know that without a large investment of time and energy two apparently normal people cannot create comparable pictures from the symbols we call words. The complexity of the brain allows a multitude of variations in structure which are not detected by the neurologist because he does not analyze brains for their ability to project comparable pictures from a multitude of symbols.

Lawyers recognize the likelihood of two persons not receiving the same picture from words. They spend their days in trying to devise language that can create only one picture. In spite of their efforts, success is rare. The problem is compounded when one tries to create the same brain picture in two persons who have different native languages.

Imperfect communication because of the assumption that words create identical pictures is present in all fields. It is particularly troublesome between doctors and patients. The doctor knows the picture he wants to form in the patient's brain but he frequently forgets the time and effort needed to make the transfer. Unless he forms the habit of having the patient in some way exteriorize his picture for observation by the doctor, confusion will abound. Accurate communication is the single most valuable asset of the skilled doctor.

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EDITORIAL

Centered on the Surgicenter

Banks Anderson, Jr., M.D.

STUDY of the past creates speculations about the future. Sam McPherson's history of North Carolina ophthalmology in this issue is an occasion for examining the ophthalmic future. The establishment of the specialty hospitals, the Charlotte Eye and Ear and McPherson, gave the same impetus to ophthalmology in North Carolina that the Wills and the Wilmer provided in Pennsylvania and Maryland. A major current in ophthalmology today, however, is the abandonment of the hospital as the surgical locale. I submit that surgeons and physicians do this at their peril.

The preeminent religion of today's civilization is faith in science or pseudoscience. The strength of the former is in its ability to predict a future, given a present set of circumstances while the latter trades upon the successes of the former. The priesthood that has most effectively bloated itself in this milieu is that of the physicians, most notably the surgeons. The source of their fatted calf has been the hospital. Consider that in every U.S. community there stands a County General or a Memorial or a Saint Luke's. The largest edifice in town, the parishioners have their cords tied here (umbilical and others), and receive here the absolution of their miseries as well as their last intravenous rites. Priests in their flowing white robes, attended by hordes of acolytes, minister here to their flocks. They bestow their annual physical blessings upon the well, their sacred nostrums upon the ill, and use their obsidian blades upon those growing evil spirits within. On the topmost floor, the community altars stand where mitred cardinals expose hearts to light and bowels to cautery. Here in private rites, behind the veil, occur sacraments of blood and human sacrifice. Daily these are performed to the edification of the masses who bear the impressive taxation of their private resources with an equanimity amazing to the irreligious or to those who know not of Kos, Karnak, Chichen Itza, or Chartres.

The anxiolytic pride of ancient and modern communities in such temples has always opened the public purse, but heedless of the polis in acropolis, ophthalmologists are deserting their temples in droves. Building little wayside altars hither and yon, they gnaw away at the core of their social power. Instead of priests of the temple they become haggling, raucous merchants in the bazaar. Other hawkers move in: optometrists, opticians, Sears Roebuck, opening adjacent stalls, selling similar wares. You psychiatrists also consider. Your specialty born in Bedlam, nurtured in public institutions for the insane, has deserted these demonic halls for the comforts of the professional center. Down the mall with the other anodynes you will find the clinical psychologists, the marriage counselors, the sex therapists, and the encounter group. Defrocked, even third parties question the value of your services.

Will the same happen to ophthalmology? Will the cataract operation lose its sacramental nature and become a mere removal of an ectodermal excrescence, a barber's service, unfunded by any but the trimmed? If so, perhaps we have our self-centered surgicentered centers to blame.

From the Duke University Eye Center, Durham, NC 27710.

An added complication... in the treatment of bacterial bronchitis*

Brief Summary Consult the package literature for prescribing information

Indications and Usage Ceclor® (cefaclor Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms

Lower respiratory infections, including pneumonia caused by *Streptococcus pneumoniae (Diplococcus pneumoniae) Haemophilus influenzae* and *S pyogenes* (group A beta-hemolytic streptococci)

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Ceclor

Contraindication: Ceclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics

Warnings: IN PENICILLIN-SENSITIVE PATIENTS CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS INCLUDING ANAPHYLAXIS, TO BOTH DRUG CLASSES

Antibiotics including Ceclor should be administered cautiously to any patient who has demonstrated some form of allergy particularly to drugs

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides, semisynthetic penicillins, and cephalosporins) therefore it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics Such colitis may range in severity from mild to life-threatening

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone In moderate to severe cases management should include sigmoidoscopy appropriate bacteriologic studies and fluid electrolyte and protein supplementation When the colitis does not improve after the drug has been discontinued or when it is severe oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C difficile* Other causes of colitis should be ruled out

Precautions: *General Precautions*—If an allergic reaction to Ceclor occurs the drug should be discontinued and if necessary the patient should be treated with appropriate agents e g pressor amines antihistamines or corticosteroids

Prolonged use of Ceclor may result in the overgrowth of nonsusceptible organisms Careful observation of the patient is essential If superinfection occurs during therapy appropriate measures should be taken

Positive direct Coombs tests have been reported during treatment with the cephalosporin antibiotics In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs testing of newborns whose mothers have received cephalosporin antibiotics before parturition it should be recognized that a positive Coombs test may be due to the drug

Ceclor should be administered with caution in the presence of markedly impaired renal function Under such conditions careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended

As a result of administration of Ceclor, a false-positive reaction for glucose in the urine may occur This has been observed with Benedict s and Fehling s solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip USP Lilly)

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease particularly colitis

Usage in Pregnancy—Pregnancy Category B—Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Ceclor There are, however no adequate and well-controlled studies in pregnant women Because animal reproduction studies are not always predictive of human response this drug should be used during pregnancy only if clearly needed

Nursing Mothers—Small amounts of Ceclor have been detected in mother s milk following administration of single 500-mg doses Average levels were 0 18 0 20 0 21 and 0 16 mcg ml at two three four and five hours respectively Trace amounts were detected at one hour The effect on nursing infants is not known Caution should be exercised when Ceclor® (cefaclor Lilly) is administered to a nursing woman

Usage in Children—Safety and effectiveness of this product for use in infants less than one month of age have not been established

Adverse Reactions: Adverse effects considered related to therapy with Ceclor are uncommon and are listed below

Gastrointestinal symptoms occur in about 2 5 percent of patients and include diarrhea (1 in 70)

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment Nausea and vomiting have been reported rarely

Hypersensitivity reactions have been reported in about 1 5 percent of patients and include morbilliform eruptions (1 in 100) Pruritus, urticaria, and positive Coombs tests each occur in less than 1 in 200 patients Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis arthralgia and, frequently fever) have been reported These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Ceclor Such reactions have been reported more frequently in children than in adults Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy No serious sequelae have been reported Antihistamines and corticosteroids appear to enhance resolution of the syndrome

Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients)

Causal Relationship Uncertain—Transitory abnormalities in clinical laboratory test results have been reported Although they were of uncertain etiology they are listed below to serve as alerting information for the physician

Hepatic—Slight elevations of SGOT SGPT, or alkaline phosphatase values (1 in 40)

Hematopoietic—Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young children (1 in 40)

Renal—Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200)

[061782R

Some ampicillin-resistant strains of Haemophilus influenzae—a recognized complication of bacterial bronchitis*—are sensitive to treatment with Ceclor.[1-6]

In clinical trials, patients with bacterial bronchitis due to susceptible strains of Streptococcus pneumoniae, H. influenzae, S. pyogenes (group A beta-hemolytic streptococci), or multiple organisms achieved a satisfactory clinical response with Ceclor.[7]

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* Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S pneumoniae* or *H influenzae* [8]

Note Ceclor is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever See prescribing information

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SPECIAL ARTICLE

Care of the Patient with Low Vision

William A. Shearin, M.D.

THERE is no way we can escape responsibility as ophthalmologists for dealing with visual handicap. The article in the *New England Journal of Medicine* by Dewitt Stetten, Jr., M.D., Ph.D.[1] is a very pointed and accurate accusation of indifference by ophthalmology to the responsibility that accompanies the diagnosis of irreversible visual loss. Dr. Stetten's story is a typical one heard every day by ophthalmic practitioners. He sums up the situation very succinctly by concluding that ophthalmologists are "interested in vision but have little interest in blindness."

Dr. Stetten saw many doctors in his efforts to be certain that the diagnosis was correct and that there were no available treatments to delay the steady decline in his vision. The medical studies were done carefully and the prognosis assessed accurately, but he received little help in developing skills to cope with decreasing vision. His ophthalmologists did not call in other members of the health team to aid him in preparing for blindness.

Rehabilitation personnel frequently know about improvements in developments to cope with low vision before this information is put to use by the ophthalmologist. The fact that ophthalmologists have not maintained leadership in the field of adaptation to low vision has had some political fallout, i.e., the Optometric Therapeutic Drug Law of 1977.

The devices that Dr. Stetten mentions are those with which all low vision practitioners are familiar. Most of them are designed for the intelligent and educated patient. It is very important for these patients to keep the lines of communication open and they will make a great effort to maintain their quality of life. In our recently founded Low Vision Clinic, we have fewer of these better informed patients than we would desire. The closed circuit television is a vital item in our armamentarium. Talking books and journals are perhaps the most frequently used items. The Braille watch and talking clock help to provide orientation for many. The Kurzweil reading machine and sonar devices for ambulation represent new approaches. Unfortunately, most of the items in this list vary from somewhat to very expensive. Therefore it requires a highly motivated and intelligent individual to use them properly. In most patients, we start with simpler devices.

It is amazing how often a thorough refraction with careful application of a strong bifocal or reading glass will suffice. Magnifiers of many types, both stand- and hand-held, are useful to a great many clients. The most discomforting point that Dr. Stetten makes is that no ophthalmologist called his attention to these devices. Let us recall that, though the paper was published in 1981, the incidents recorded occurred over 10 years ago. I sincerely believe that the general information of ophthalmologists has vastly improved in the interim. My own alma mater, Duke Medical Center, has now instituted a Low Vision Clinic for its patients and for the resident staff. No doctor likes therapeutic failure, and Dr. Stetten reminds us that both the autopsy and blindness mean failure. I believe that more concern for the quality of life of the visually impaired will be shown in the future. It is now a fairly simple matter to provide a bibliography of sources of assistance to such patients without any great expenditure of time during a busy office schedule. Many agencies now provide such assistance and we must call these to the attention of every patient who needs them.

A subnormal vision patient is visually limited and impaired. To what degree he is visually handicapped must be settled by using other criteria. To quote from Eleanor Faye, *The Low Vision Patient*,[2] "Any sudden or catastrophic reduction of vision finds an unprepared person shocked by his sudden disability and his vulnerability. He may have had an eye injury, a macular hemorrhage, a detached retina, or a technically successful cataract or corneal surgery which did not restore vision. He may have field loss from a vascular accident or a brain lesion requiring surgery or radiation. Nothing in his experience has prepared him for a life with reduced sight. He is an acutely disabled person." Certain patients may have good visual acuity but function quite poorly because of severe constriction of the peripheral visual field. Such a patient is especially handicapped since ambulation is so dependent on good peripheral perception and orientation. Imagine trying to cross a busy street with a peripheral field of 10 degrees (as is the case of many retinitis pigmentosa patients, one of the most common diagnoses seen in our Low Vision Clinic). As Dr. Faye suggests, visual handicap is defined for an individual according to his own expectation or that of his associates or family and/or the requirements of his avocation.

The low vision patient becomes a candidate for rehabilitation when a visual disorder or impairment interferes with his ability to function normally in accustomed activities.[3] Rehabilitation of the minimally impaired may be achieved with an optical aid and introduction of accessory aids. When the impairment is more severe, resulting in disability and handicap or when he rejects the aid, the rehabilitation becomes more complex and may require several types of professional services. A low vision examination provides for the patient a positive perspective regarding the effective use of residual vision and can become a point of entry to the various rehabilitation services.

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The old adage is still quite true, as taught in medical school, that 90% of the diagnosis is obtained with a good history. This tenet also applies to the condition of limited vision and to the determination of the specific handicap the individual patient feels. It must be determined for the individual how disastrous his present visual situation is for him at the present time. Often he comes for the purpose of having his vision restored and considerable time and skill are needed to put the situation into a realistic perspective. We forget that a visual aid represents the "end of the road" for this patient. On the other hand, a patient with longstanding visual loss may have lost interest in reading. Particularly is this apt to occur in an individual in a lower socioeconomic level. A willingness to learn and to adapt may be difficult to elicit. These different views of visual loss explain why patients' reactions to this predicament can vary to such a large extent. I happened upon an article on the sports page of a recent newspaper from the New York Times News Service regarding a golfer, blinded in World War II, who in spite of his handicap spent years perfecting his game with aid of an assistant and went on to win the Blind Golfer's National championship several times. Many full sighted sportsmen could well envy a best round of 77 and a handicap of 20. This individual's adaptation is indeed remarkable.

I have the privilege of working with a colleague, who is also a patient with the best vision of 20/400 and who is now a doctoral candidate in psychology at North Carolina State University. Mr. Paul Rowland is a remarkable person who experiences partial achromotopsia with its attendant nystagmus, astigmatism, partial color blindness, and photophobia. His official title is Director of Psychological Services for the Raleigh Lions Clinic for the Blind, a job he performs well in spite of difficulty.

Mr. Rowland has called to my attention the five stages of adjustment or negative change which a patient must make who experiences a handicap. These stages are presented by Elizabeth Kubler-Ross in her book entitled *On Death and Dying:*

1. *Denial* — in which the patient maintains it "cannot happen to me. There is some awful mistake and I shall not allow it to be." These are the people who insist on driving their car into the nearest tree. In dealing with the newly blinded and with immature patients, this reaction is commonly seen. Many ancillary personnel feel that doctors are not honest with the patient and thus do not allow them to get on with living their lives. It has been my experience that the majority of patients hear little of what is first said to them by the doctor. Most of them do not remember the natural history of their predicament until it is repeatedly recounted for them. They are like the patient who drifts from one refractionist to another seeking a pair of glasses that will make him see "as a youth." Denial has a part in that we do not wish to admit our inability to do things we once excelled at.

2. *Bargaining* — this is the stage in which the patient will attempt to bargain with God, agreeing to repent of all past sins in exchange for vision again. He may also bargain with the doctor to pay whatever fee he requires in exchange for a cure.

3. *Anger* — the patient's hostility may be consuming and may be directed to the doctor or the family or close acquaintances. He often asks the question, "why me?" The resentful and demanding patient may represent this large group.

4. *Depression* — the patient feels that nothing will be of any avail, that there is no doctor's therapy and nothing the family can do for him, and no rehabilitative measures will work. It is my impression that the majority of patients have or have had some element of depression in regard to their visual loss.

5. *Acceptance* — at this desirable point, the patient has resolved that he will get on with his life and not allow the fact to interfere or to spoil his joy of living. Virtually every patient who learns to use visual aids well has satisfactorily reached this point. At this stage, there are many avenues of help available for the patient.

The art of low vision therapy is at least 25 years old. A few attempts previous to this made use of high-plus reading glasses and a few telescopes. But the scientific attempts to help the partial sighted on the part of medicine began in 1953 with the Low Vision Program of the New York Lighthouse for the Blind.[4] In 1976 it established a Low Vision Training Center and Continuing Education Center, the first formal training program in the country for low vision personnel. At the 25th Anniversary Symposium held in November 1979, some interesting facts were presented.[5] There are presently estimated to be about 10 million people in the United States with partial vision. Less than 1 million of these are legally blind. There are at least 250 Low Vision Centers now serving this population in addition to a few private practitioners.

In the year 1978 the Lighthouse Low Vision Clinic saw 1,600 patients, 941 of whom were new cases. Eighty-one percent of these were over the age of 60, a figure that will continue to increase as the population ages. In the last 25 years the Lighthouse Clinic has seen 18,000 low vision patients.

According to the North Carolina Commission for the Blind, there were approximately 103,700 visually impaired individuals in North Carolina in 1979. Of these, the Blind Commission provided help for 5,105 and low vision assistance for 389. This latter figure has surely increased since.

The Raleigh Lions Clinic for the Blind is an organization sponsored by the Lions Club of the Capital Area.[6] A Low Vision Clinic has been operative there since 1969. Through June 1979, 2,951 screenings for low vision assistance had been given. Of this group, 113 were totally blind. To the rest of these clients, a total of 2,721 visual aids were given. These were of various types:

1. 770 spectacles — these are the most easily used and cost effective for the average client; hence, the prime necessity of a thorough refraction for a very large portion of the clientele.

2. 2,430 magnifiers, hand-held or stand — these are the most versatile and cost effective for the beginning low vision patient.

3. 14 CCTV (closed circuit television units) — a few of these units were assigned signifying the more sophisticated need of a few patients.

4. 550 telescopes — 26 of these represented more sophisticated head-borne aids of the surgical loupe type

which were occasionally needed for specific tasks.

In another analysis during the period 1976-1981:

1. 25% had vision of 20/50 or better and required no special aids.
2. 22% had vision of 20/400 or worse and were not primary candidates for low vision aids.
3. 53% comprised the visual range of 20/60 to 20/400. This group are those which visual aids will help most of all.

The average age for our clients at the Lions Clinic is approximately 30, so the results are somewhat skewed towards the more potentially successful group — the usual vocational rehabilitation client. If the geriatric group had been the primary focus, the visual results would have been much less successful. This group tends to withdraw and not to expend the necessary effort in contrast to their younger counterparts. Motivation to learn new habits and to accomplish new tasks are much more difficult for these patients.

The organization and function of the Low Vision Center revolves primarily around the personal and psychological reaction of the patient who is to be served. Therefore, the logistics of an adequate service can become most complex, involving many different disciplines. This has best been exemplified by the successful organization of the New York Lighthouse for the Blind. Dr. Eleanor Faye has done an admirable job of directing the institution over the years, accounting for much of its success. Since rehabilitation implies full restoration of an individual's capacity and economic usefulness, these programs must be designed to help recapture lost skills, maintain personal care, and maintain and/or design new life patterns. The beginning point is so often the eye examination at which time the practitioner must analyze the patient's need and thereby make appropriate referrals. Rejection of an optical aid by the patient or the discovery that an aid does not meet his total needs suggests that the refractionist should now introduce the idea of rehabilitation and make appropriate referrals for his patient. Even with minimal visual impairment, some patients still need extensive counseling or other services. The patient may feel that he needs help over and above what the optical aids will provide. He also may feel that changes have occurred in his job or family life that he cannot manage alone. It is important to analyze why a patient has rejected a device even though it may have helped him to see better. The nature of the loss and whether or not the prognosis is adequate is also important to consider. There may be indications of other problems or physical disabilities aside from the visual, including such things as poor hearing and neurological deficits, which coupled with reduced vision may require quite comprehensive training and/or education. The enterprise is complex and necessitates cooperation of many different groups of therapists. A comprehensive agency should offer an individualized retraining and learning program based on maximum use of the remaining vision.

Such a rehabilitative undertaking has limitations and special problems. As an example, history taking centers largely about general points rather than specifics. Essentially the patient must be able to describe his disability and to suggest what he thinks he needs or wants. It is also vital to find out what he thinks the examiner is going to do for him. It is also quite important that the patient understand that every effort will be made to help him use his vision. In addition, he must know that the vision restored with vision aids is not natural sight and that it will require compromise as he uses some type of magnifying device. It is also important that examination should start on a positive note and that it should avoid arousal of the patient's fears or anxieties about his loss.

Special limitations must be considered in detail. Dr. Gerald Fonda points out:[3] "The limitations of the patient are age, intelligence, motivation, coordination, personality, necessity, type of ocular disease, and duration of visual defect, as well as the nature of his general health." All of these are finally controlled by what the patient considers important and, in essence, this latter becomes a first consideration.

Generally, less intelligent patients will not accept an optical aid readily. They would rather not read than hold the book very close. Without motivation there is no hope, even if vision is reasonably good. Older people are much less likely to accept aids. The problem is not only age but concomitant factors such as poor motivation and in the case of recent visual loss, retained hope of cure. Senile macular degeneration often falls into this category. It is often much easier to have someone read to the patient than to maintain awkward posture or to move slowly across the page. Dr. Fonda feels that in patients above 70 years of age, less than 30% will use an aid successfully if the visual acuity is less than a level of 10/200. Some intelligent people who have been avid readers have lost their ability to concentrate. Marked limitations of the peripheral visual field will definitely limit the use of low vision aids. Diagnoses of retinitis pigmentosa, glaucoma, optic atrophy and choroideremia usually indicate loss of peripheral vision. There is apparently a relationship between personality and acceptance of low vision aids. A stable, independent, realistic patient is apt to adapt to their use with relative ease. On the other hand, the mentally retarded cannot adapt so well and this is a common problem since ocular disease is often accompanied by disease of the central nervous system.

In rehabilitation at home, perhaps the aid of a social worker is more important than a medical practitioner. When senile macular degeneration has been appropriately treated, using the proper aids, one must then consider the bottom line of the accomplishment of everyday tasks. How to function in one's own kitchen can be a major problem. For example, the patient may obtain an electric oven broiler rather than having to light a gas oven. Perhaps the use of dark dishes and a light tablecloth will increase contrast. The patient must learn to reach more gingerly for a glass to avoid tipping. Pouring of liquids may need to be done over the sink. Cabinet knobs and stove dials can be marked with bright paint. One might need to know that milk cartons are opened on the side opposite the seam which is found at one of the four corners. Clothing must be promptly put away, always in the same place or marked with cardboard in the pocket, etc. Here we have arrived at the "WW principle" — the whatever works principle.[5]

Another special problem is that of the diabetic. One can have dramatic and rapid loss of visual acuity requiring tremendous adaptation on the part of the patient. In diabetic retinopathy most of the visual difficulty lies in leakage from capillary aneurysms in the macula and/or microvascular capillary shunt vessels. Characteristically the fluctuating vision can vary several times during the day. To this must be added a variation in refractive error with blood sugar levels. These patients represent a significant portion of the patient load in the Low Vision Clinic. Management of the diabetic's daily insulin dosage is a major task. Needle guides and preset syringes as well as special gauges are available. The use, however, may still represent a major obstacle. Many such patients depend on others for injections. Encouraging independence in the use of these special devices represents a major effort in rehabilitation.

Another special problem of great concern is that of low vision in children. All children with low vision do not automatically need visual aids. A young child can read quite well because of superior accommodative power. A school child has quite different needs from those of an adult. An adult tends to read for long periods, but the child's visual tasks change constantly in the school or home setting. One aid may not be appropriate for several different tasks. A child with visual acuity of 20/70 to 20/200 may not need magnification until adolescence so long as he is able to hold his work close to his eyes. These problems are quite different from those of an adult. Distance seeing for the chalkboard is another problem. No real solution exists in the regular classroom other than for the teacher to provide copies of notes for each handicapped student. Occasional use of a monocular telescope is of some benefit until the newness wears off. Then its chief use by the school child is at such situations as athletic events, school programs, or perhaps travel tasks.[4]

It is psychologically damaging to impose large print on a school child until the actual need for this is established, based on trial and observation. As noted, a school child with 10 diopters of accommodation can read ordinary print if his acuity is at least 20/200. The matter of "being different" provides a key to the lack of acceptance of such aids by so many adolescents in the School for the Blind. Why in the past was large type print so often provided? Because it is available as special material, and schools that provide it feel they are doing something "for the blind." It is often a matter of custom and also represents an adult perception of the value of large print. As to "being different," a recent observation in our clinic waiting room illustrates this point. I had just completed the examination of several Governor Morehead School students. A routine question is to ask "do you sit close to the TV and do you get in the way of others?" Each of these particular students had denied any particular problem. As I walked by I was amused to observe four of them sitting about the table containing a 19-inch screen television set, all with a viewing distance of less than three feet and thinking nothing of it.

For a student who cannot read 18-point type even with magnifiers, the use of closed circuit television provides access to most printed matter. The CCTV provides for the visually handicapped child a most stimulating means of participating. The CCTV provides a magnification of 40-45 times. A reverse polarity switch is also available according to the patient's desires. The use of this type of accepted technology does not stigmatize a child, and his classmates are acceptive of his ability and not aware of his disability.

Thus the entire area of low vision rehabilitative work is seen to be tremendously complex. Ophthalmologists' responsibility is basic and it is hoped that in the future this will be provided bountifully to the needy patient who enters our offices. This is of course only the starting point, as services of many others must be enlisted, if we provide the proper initiative.

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SCIENTIFIC ARTICLE

Ocular Emergencies: Practical Therapeutics

Kenneth L. Cohen, M.D.

THE family physician is often the first to be consulted by a patient who has an acute eye disorder. Whether the problem is presented on the telephone, in the office, or in the emergency room, the physician needs to decide if it constitutes an emergency, what treatment measures should be started, and if immediate referral to an ophthalmologist is indicated. He must therefore know the signs and symptoms of an ocular emergency. He must also know which ocular injuries need therapy within minutes and which injuries need therapy within several hours after a more extensive examination. He must be familiar with the appropriate therapy and know what measures to avoid.

The two ocular emergencies that require immediate treatment, ideally within minutes, are chemical burns of the eye and a central retinal artery occlusion. Other urgent situations, which require treatment within one to several hours, include laceration of the globe, acute angle-closure glaucoma, orbital cellulitis, cranial arteritis, and bacterial corneal ulcer. Danger signs and symptoms that demand immediate evaluation include sudden loss of vision, loss of vision with pain or after injury, trauma with a possible laceration of the globe, and sudden onset of binocular diplopia.

Measures to Avoid Initially

When examining and treating a patient with an acute eye problem, certain measures should be avoided. When a laceration of the globe is possible or if an ophthalmoscopic examination is required, ophthalmic ointments should not be administered. If there is a penetrating injury to the eyeball, the ointment may get into the eye. If ophthalmoscopy is necessary, ointment on the cornea may cause distortion and inadequate visualization of the retina.

Topical anesthetics should not be given to a patient for continued use at home. They will inhibit healing of the corneal epithelium and will eliminate the protective blink, which exposes the cornea to increased trauma. Corticosteroids in any form should not be used if a definitive diagnosis has not been made, because they may potentiate bacterial, fungal, and herpes simplex infections of the cornea. Prolonged use of topical corticosteroids frequently causes glaucoma and occasionally even cataract.

The Nontraumatic Red Eye

Diagnostic considerations in a patient with a nontraumatic red eye include conjunctivitis, corneal ulcer, acute iritis, acute angle-closure glaucoma, orbital cellulitis, spontaneous subconjunctival hemorrhage, and stye. Under these circumstances, danger symptoms are blurred vision which does not improve with blinking, pain, photophobia, and halos around lights (table 1). Danger signs are decreased vision, a ciliary flush, loss of corneal luster, a small, dilated or irregular pupil that reacts slowly or is nonreactive to light, a narrow anterior chamber, an elevated intraocular pressure, proptosis of the eye, and decreased ocular movements (table 2). If a corneal ulcer, acute iritis, acute angle-closure glaucoma, or orbital cellulitis is diagnosed, an ophthalmologist should examine the patient as soon as possible.

TABLE 1
Important Symptoms of Red Eye

	Acute glaucoma	Acute iritis	Keratitis	Conjunctivitis*
Pain	+ to + + + +	+ +	+ +	0
Blurred vision	+ + +	+ to + +	+ + +	0
Photophobia	+	+ + +	+ + +	0
Halos around lights	+ +	0	0	0
Discharge	0	0	0 to + + +	+ to + + +

Key: + = mild; + + = moderate; + + + = moderately severe; + + + + = severe; 0 = absent.

* Patients with viral conjunctivitis often have associated symptoms of upper respiratory infection; itching is a common symptom in patients with allergic conjunctivitis.

Corneal Disease

Pain and photophobia are common complaints of patients who have corneal infection or inflammation. The eye is red, visual acuity is usually reduced, and loss of corneal luster is noted when the cornea is examined with an obliquely held hand light. A corneal ulcer stains green with topical fluorescein. Iritis, which usually accompanies corneal inflammation, may cause a miotic pupil. Conjunctivitis and spontaneous subconjunctival hemorrhage produce redness of the eye but usually do not cause pain or decreased vision. Prompt etiologic evaluation and treatment of a corneal ulcer prevent corneal scarring and subsequent impairment of vision.

Acute Iritis

Acute iritis causes pain in the eye, periocular headache, photophobia, and decreased vision. The eye is red. Examination reveals a ciliary flush (dilated deep vessels around the corneal periphery) and a small or irregular,

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TABLE 2
Important Signs of Red Eye

	Acute glaucoma	Acute iritis	Keratitis	Conjunctivitis
Ciliary injection	+	+ +	+ + +	0
Pupil	Mild-dilated, poorly reactive	Small, irregular, poorly reactive	Normal or small	Normal
Corneal haze	+ to + + +	0	+ to + + +	0 to +
Intraocular pressure	High	Usually low	Normal	Normal
Anterior chamber depth	Shallow	Normal	Normal	Normal
Preauricular node	0	0	0	Bacterial: 0 Viral: + +
Discharge	0	0	±	Allergic: stringy Bacterial: mucopurulent Viral: watery

Key: + = mild; + + = moderate; + + + = moderately severe; ± = sometimes present; 0 = absent.

poorly reactive pupil. Acute iritis must be differentiated from conjunctivitis and acute glaucoma. In conjunctivitis, the vision and the pupil are normal, and pain and photophobia are not present. Acute iritis is treated with topical corticosteroids and cycloplegics, which reduce the intraocular inflammation and pain. These agents will also dilate the pupil to prevent secondary glaucoma from adherence of the iris to the lens.

Acute Angle-Closure Glaucoma

Acute angle-closure glaucoma presents with a sudden onset of pain in and around the eye. Nausea and vomiting may occur. Vision is blurred. On examination, the cornea is hazy from corneal edema and the pupil is moderately dilated and reacts poorly to light. Tonometry will disclose significantly elevated intraocular pressure when compared with the uninvolved eye. Lowering the intraocular pressure and relieving the pupil block are necessary to prevent adhesions between the iris and lens and the iris and cornea. Such adhesions can lead to chronically increased intraocular pressure and glaucoma.

Orbital Cellulitis

Orbital cellulitis, secondary to infection, presents with edema and redness of the eyelids and the conjunctiva, proptosis of the eye, and pain around and behind the eyeball. Visual acuity can be reduced and movements of the eye may be painful and restricted. This condition is usually due to spread of infection from the paranasal sinuses to the orbit. Prompt intravenous antibiotic therapy prevents spread of the infection to the meninges and brain. Surgical drainage of the infected sinus should also be considered.

Conjunctivitis

Conjunctivitis is one of the most common eye diseases. It can be classified according to its etiology, and the three most frequent causes are viruses, bacteria, and allergies. Conjunctivitis is not a painful disorder. Although the patient may complain of a red and irritated eye, vision is usually unimpaired. Vision may occasionally be diminished by mucus and inflammatory cells in the tear film, but this clears with blinking.

Viral conjunctivitis may be preceded by symptoms of upper respiratory infection, and the patient may have a palpable, tender, moderately enlarged preauricular node. The most common etiology is the adenovirus. The eye discharge is watery and the cornea is grossly clear. Bacterial conjunctivitis is associated with a mucopurulent discharge. If the patient has a hyperacute purulent conjunctivitis, an ophthalmologist should be consulted immediately. This type of conjunctivitis is caused by Neisseria gonorrhoeae or meningitidis, and these organisms can cause corneal ulceration and perforation. The patient needs a systemic evaluation to locate other infected foci. Allergic conjunctivitis is characterized by a stringy discharge and itching sensation.

There is no specific treatment for viral conjunctivitis but topical decongestants may be used to relieve symptoms. Bacterial conjunctivitis should be treated with a broad-spectrum topical antibiotic solution, which is administered every two hours. Hyperacute, purulent conjunctivitis is treated with the appropriate systemic antibiotic. Allergic conjunctivitis may also be treated with topical decongestants. Occasionally, topical corticosteroids may be necessary. A patient with conjunctivitis that does not improve within three to four days should be referred to an ophthalmologist.

Stye

A stye is an acute, localized infection of the glands and/or lash follicles of the eyelid. The lid and the adjacent conjunctiva are painful, red, and swollen. The treatment of warm compresses to the eyelid and topical antibiotics may be started by the family physician. Incising or squeezing the stye is not recommended because of the potential spread of infection into the periorbital tissues.

Sudden Vision Loss in a Normal-Appearing Eye

Sudden, nontraumatic loss of vision in a normal-appearing eye is usually monocular. The visual loss may occur over a period of seconds or several hours, and the time course helps in determining the cause. Diagnostic considerations include optic neuritis, giant cell arteritis, central retinal artery or vein occlusion, vitreous hemorrhage, macular hemorrhage, retinal detachment, amaurosis fugax, and chorioretinitis. The family physician should be able to diagnose and initiate immediate treatment for central retinal artery occlusion and giant cell arteritis. Prompt emergency treatment may save the patient's vision.

Central Retinal Artery Occlusion

Complete central retinal artery occlusion presents as a painless loss of vision over a period of seconds. It may be due to thrombosis, embolism, or vasculitis (giant cell arteritis). Retinal examination reveals attenuated arterioles with segmentation of the blood column and a bright red spot in the macula, surrounded by a pale, opaque retina. Because irreversible necrosis of the retina occurs within 45 minutes, an ophthalmologist should be called. Immediate lowering of the intraocular pressure may restore vascular flow.

While waiting for the ophthalmologist, treatment measures can be started. Intermittent application of digital pressure on the lids (i.e., pressure for 20 seconds and release of pressure for 20 seconds) should be used to decrease the intraocular pressure. Fifty percent glycerin, 1 to 1.5 gm/kg orally (over ice), and acetazolamide (Diamox), 500 mg intravenously, further reduce the intraocular pressure. Increasing arterial PCO_2 by having the patient breathe into a paper bag may also help dilate the retinal arterioles.

In cases due to embolization, the source of the embolus must be found in order to avert further embolization to the eye or brain. The medical team must decide whether to pursue angiography or anticoagulation therapy.

Retinal Detachment

A retinal detachment is a separation of the inner sensory retina from the retinal pigment epithelium. The peak incidence of retinal detachment occurs between 55 and 65 years. The most common cause is a degenerative, peripheral retinal tear which allows vitreous fluid to leak under the retina and detach it. When the retina is torn, a shower of red blood cells enters the eye which the patient sees as floating opacities. As the retina detaches, the patient experiences flashes of light. A shadow then begins to obscure the visual field of the affected eye. Ophthalmoscopy may show a semitransparent retinal elevation, but this can be difficult to observe. Any of these symptoms should prompt referral to an ophthalmologist.

Amaurosis Fugax

Amaurosis fugax is a transient, abrupt, painless, monocular loss of vision which persists for two to three minutes; vision is then regained over five minutes. Embolization causes these episodes. Ultimately the patient may become completely blind or have a cerebrovascular accident or myocardial infarction. A complete cardiovascular examination is indicated.

Giant Cell Arteritis

Ischemia of the eye secondary to giant cell arteritis (temporal arteritis, cranial arteritis) is a true emergency. The disease is commonly bilateral. Complete bilateral blindness may result if the disease is not treated. Giant cell arteritis is uncommon in patients under the age of 60. Initial symptoms are general malaise and weakness, myalgias, loss of appetite, pain in the jaws with chewing, headaches, and pain when combing hair. The patient may present with abrupt unilateral or bilateral blindness or with gradually decreasing vision over a day. Blindness is the result of ischemia of the optic nerve and nerve head. There is tenderness, firmness, and palpable nodularity of the superficial temporal artery with loss of pulsation. Examination reveals swelling and blurring of the optic nerve head. The erythrocyte sedimentation rate is markedly elevated, and this simple test should be performed without delay. If the diagnosis is made, systemic corticosteroid therapy, 80 to 120 mg prednisone daily, should be started immediately to prevent blindness. A systemic evaluation can then be done. Biopsy of the superficial temporal artery confirms the diagnosis.

Vitreous Hemorrhage

Spontaneous hemorrhage into the vitreous can cause sudden and profound loss of vision and requires ophthalmologic evaluation. However, the initial treatment is expectant; the vitreous blood must resorb before the underlying pathology can be seen. The etiology may be new blood vessels from diabetes, sickle cell disease, and old retinal vascular occlusion, a tumor in the eye, congenital vascular malformation, chorioretinitis, a retinal tear or retinal detachment. When using a hand light or an ophthalmoscope, the examiner will note a loss of the usual red reflex from the fundus and a hazy view of the retina.

Central Retinal Vein Occlusion

Central retinal vein occlusion causes painless, decreased vision occurring over hours. Examination of the retina shows dilated veins, many retinal hemorrhages, cotton-wool spots, and papilledema. The etiology may be localized to the eye (for example, atherosclerosis or glaucoma) or it may be associated with a systemic disease causing hyperviscosity of the blood, vasculitis, or hypertension. In any case, a complete ophthalmologic and medical evaluation should be done as soon as possible.

Nontraumatic Diplopia

The principal cause of nontraumatic total third-nerve paralysis is an aneurysm at the junction of the internal carotid and posterior communicating arteries. It is characterized by the sudden onset of unilateral headache and pain in the forehead or the eye, ptosis, and exotropia with inability to move the eye medially past the midline and up or down. The pupil is dilated and nonreactive to light. These aneurysms bleed into the subarachnoid space. The treatment of the aneurysm is surgical, and immediate neurosurgical consultation is essential.

It is important to note that in any acquired, nontraumatic extraocular muscle deviation, myasthenia gravis should be ruled out with an endrophonium chloride (Tensilon) test.

Trauma

Chemical Burns

Chemical ocular burns are quite common and can be caused by acid or alkali. Regardless of the causative agent, chemical burns need immediate attention. The extent of injury is related to the nature and concentration of the agent. In general, alkali burns are more severe than acid burns, and the higher the pH, the more serious the injury.

The agents that most frequently cause alkali burns are lye (sodium hydroxide and potassium hydroxide), lime, and ammonia.

Chemical burns must be treated immediately with extensive irrigation of the eyes, using the most readily available source of water. After topical anesthesia, the lids must be held apart, ideally with a lid speculum. Particulate chemical matter must be promptly removed from the lids and conjunctival fornices with cotton swabs, after everting the lids. The eye should be irrigated continuously (with normal saline attached to intravenous tubing) until the pH in the conjunctival sac is approximately 7.4 when checked with pH paper. Topical anesthetics facilitate emergency treatment but repetitive use is discouraged. An ophthalmologist should evaluate the patient as soon as possible to determine the extent of the injury and to initiate further treatment.

Rupture of the Eyeball

Direct and indirect injuries of the eyeball can cause damage to all parts of the eye. Rupture of the eyeball must first be excluded. The eye should be examined carefully with no pressure applied to the lids or eye. Of course, lifesaving measures have priority over emergency eye care. Followup is needed in most cases to evaluate the final damage.

Laceration

A description of the traumatic event helps in evaluating the severity of an ocular injury and the likelihood of a laceration of the eye. Signs suggestive of a laceration include reduced visual acuity, reduced intraocular pressure, change in depth of the anterior chamber (shallow or deep), displacement or change in the shape of the pupil, a visible wound in the cornea or sclera, prolapse of ocular tissues, edema of the conjunctiva, hyphema, and laceration of the lid or adnexa. If laceration of the eye ball is suspected, a rigid shield, resting on the periorbital bones, should be placed over the injured eye for protection. The normal eye should be covered with a patch to decrease binocular movement. An ophthalmologist must be consulted immediately to determine the extent of injury and to initiate treatment.

Foreign Bodies

The family physician can diagnose corneal abrasions and superficial conjunctival and corneal foreign bodies. The patient's chief complaints are foreign-body sensation, pain, and photophobia. There may be decreased vision, lacrimation, blepharospasm, and repetitive blinking. The eye is red. With such injuries, a drop of topical anesthetic makes examination easier. After the upper eyelid has been everted, the cornea, the conjunctiva and the conjunctival side of the eyelids should be examined for a foreign body. Corneal epithelial disruption can be detected by noting distortion of the corneal reflection from a single oblique light source, or by fluorescein staining with sterile fluorescein strips which are moistened with saline and applied to the conjunctiva. A blink will spread the fluorescein over the cornea and conjunctiva. Green staining under a white or blue cobalt light indicates absence of epithelium.

A superficial corneal or conjunctival foreign body can be removed with gentle irrigation or a cotton swab after topical anesthesia. After instillation of one drop of a weak cycloplegic agent, such as 2% homatropine, and an antibiotic ointment, two eye pads should be placed over the eye, with moderate tension on the tape so that the lids cannot open. The patient should be reevaluated within 24 hours. Corneal infections can occur after corneal foreign bodies.

Certain lacerations of the eyelid, involving only the skin and not the lid margins or lacriminal canaliculi, can be repaired by the family physician. Laceration of the lid margins must be well approximated to prevent deformity and should be repaired by an ophthalmologist. Special surgical techniques are needed to repair the canaliculi in an attempt to restore integrity of the lacrimal drainage apparatus. This requires the use of very fine suture and special probes.

SCIENTIFIC ARTICLE

A Chronically Red Eye

Laura P. Svetkey, M.D. and G. Ralph Corey, M.D.

WHILE most non-ophthalmologists approach the acute red eye with trepidation, chronic inflammation is considered much less worrisome and often is carefully ignored or subjected to therapeutic trials without a diagnosis. Unfortunately, this approach can occasionally cause prolonged delays in making a "not so benign" diagnosis.

A.H.D. is a 43-year-old Yemenese gentleman who was well until 1973 when he was bitten by a mosquito in his left eye. He had pain and redness in that eye which slowly resolved over the next several months and he remained well until 1976 when he developed a recurrent "blood blister" on his left sclera. Because this continued to cause problems, he underwent closure of a scleral hole in 1979 with resolution of symptoms until 1980 when he again developed a recurrent "red eye" which persisted for the next three years despite multiple therapeutic trials (i.e., treatment for trachoma, herpes simplex, as well as a trial of prednisone).

Ocular exam (see figures 1 and 2) on admission revealed advanced conjunctival scarring with adhesions in the left eye between the bulbar and tarsal conjunctivae. The upper tarsal conjunctiva showed a linear scar and the cornea demonstrated a filamentary keratitis with mild peripheral vascularization and slight opacification.

Work-up of this problem included a PAP smear which revealed adenocarcinoma and therefore the patient underwent a conjunctival biopsy which showed only granulomatous reaction with foreign body giant cell reaction and atypical epithelial cells, but no adenocarcinoma. An orbital CT scan was done which showed no mass lesions but did demonstrate conjunctival thickening. Finally the patient underwent full thickness lid biopsies x 4 of the upper and lower lids and three of these were read as sebaceous gland carcinoma in both lids.

Despite recommendations for surgical removal, the patient desired to return to Yemen and therefore no further therapy was undertaken at Duke.

While sebaceous gland carcinoma of the eye is uncommon,[5] it is second only to basal cell carcinoma among malignancies of the eyelid.[1] In a survey of 550 malignancies of the eyelid entered in the U.S. Registry of Ophthalmic Pathology between 1955 and 1959, 7 (1.3%) were sebaceous gland carcinomas.[6] Other authors[4, 7, 11] have estimated sebaceous gland carcinoma to be 0.2 to 5.5% of eyelid malignancies.

Sebaceous gland carcinoma can arise from any of the sebaceous glands of the eye (see figure 3): the meibomian glands which lie on the inner surface of the eyelids within the tarsal plate and secrete an oily layer which is deposited into the lid margin to form the interior layer of the tear surface; the glands of Zeiss which lubricate the cilia at the lid margins; other sebaceous glands which are associated with and drain into the fine hair follicles covering the cutaneous surface of the eyelids; and sebaceous glands in the caruncle and eyebrow. The meibomian gland is the most common origin of sebaceous gland carcinoma and the upper eyelid is the most common site. In a case series of 85 sebaceous gland carcinomas of the eye, 47 were in the upper lid, 21 in the lower lid, 7 in both lids, 8 in the caruncle and 2 in the eyebrow.[7]

These tumors tend to occur in older adults, with average age of diagnosis approximately 60-65 years[1, 7, 4] but they have been reported in individuals as young as 13 years.[7] There is a slight predilection for women (ration of 1.5 to 1)[1, 4, 7] and it is believed to have a "worldwide" distribu-

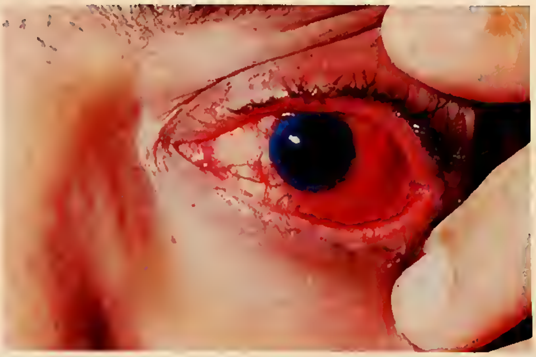

Figure 1.

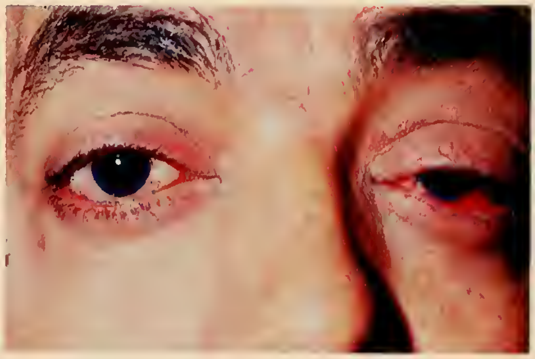

Figure 2.

From Duke University Medical Center, Box 3038, Durham, NC 27710.

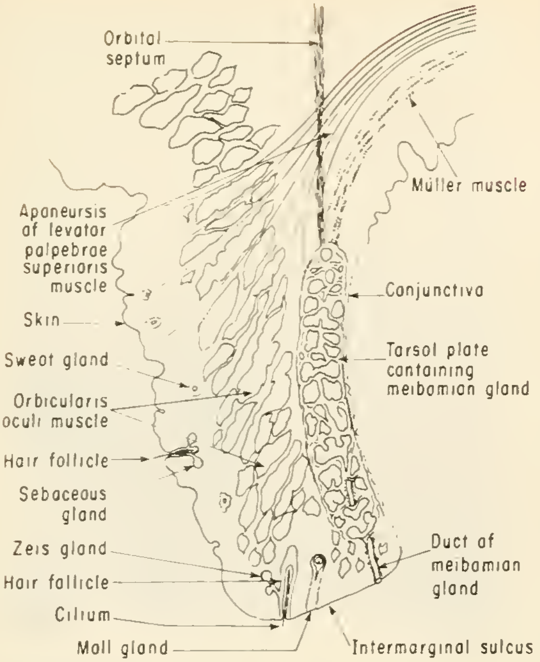

Figure 3.

tion, affecting all races.[5] It has been reported to occur following radiation to the eye,[7] but in general the etiology is unknown.

As in our patient, diagnosis is often delayed. The average time between onset of symptoms and definitive diagnoses in two series was 1 to 2 years, with delays up to 5 years.[4, 5]

Sebaceous gland carcinomas are most frequently misdiagnosed as chronic chalazion (stye). Less frequently they are confused with basal cell carcinoma, chronic unilateral conjunctivitis, and blepharitis.[7] Differential diagnosis also includes squamous cell carcinoma and granulomatous inflammation of the eyelid due to syphilis, TB, sarcoid, or metastatic disease.[5, 7]

Once suspected, the diagnosis can be suggested by PAP smear as in our patient. But it is recommended that the diagnosis be confirmed by full thickness biopsy.[8] Even histologic diagnosis can be confusing: less differentiated lesions can resemble basal cell carcinoma[1] while the normal squamous differentiation and keratinization of the sebaceous gland ducts near the lid margins can make the tumor histologically resemble squamous cell carcinoma. Metastatic disease to the eye also must be considered. This usually originates from breast or bronchogenic lung cancer though metastases from the gastrointestinal tract, ovary, thyroid, testis, or prostate may also occur.[2] Any of these may cause a diagnostic dilemma, but metastatic breast cancer may be particularly problematic since pagetoid invasion of sebaceous gland carcinoma can be histologically similar to Paget's disease of the breast.[1]

Sebaceous gland carcinoma generally presents as a nontender enlarging mass, but a small primary may be overlooked until it invades the orbit, lacrimal gland or parotid lymph nodes.[1] Spread into other regional nodes (preauricular and cervical) as well as direct intracranial extension can occur.[7] Distant metastases have been reported in lung, liver, brain, distant nodes, pericardium, pleura, and bone.[7]

Tumor-related five year mortality is estimated at 6 to 30 percent.[1, 3, 5, 7] Worse prognosis is associated with larger tumor size, multicentric origin, poorly differentiated histology, highly infiltrative pattern, local invasion and orbital spread.[1]

Treatment consists of wide resection. Surgical removal of the orbit is recommended when it is involved.[9, 11] Excision of involved regional lymph nodes is recommended, but its effect on prognosis is unclear.[9] The use of radiotherapy remains controversial, but is recommended in those patients unable or unwilling to undergo surgery.[9, 11]

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SCIENTIFIC ARTICLE

A System For Examining The Ocular Fundus

David E. Eifrig, M.D.

THE ability of physicians to examine the ocular fundus varies greatly. Sussman, Tsiaris and Soper[1] studied the results of fundus examinations performed by a variety of physicians on patients with diabetic retinopathy. They found that for non-ophthalmologists the serious error rate was 49% and the overall error rate was 61%. That is, approximately half of the physicians not specifically trained in ophthalmic techniques were unable to recognize the most serious ocular complications of diabetes.

Those of us who are medical educators, especially ophthalmologists, should feel badly about the results of this study. The examination of the ocular fundus is extremely helpful in determining the status of the small vessels in our patients, and a skilled fundus examination cannot be underrated in terms of lending diagnostic and prognostic clues in many diseases, especially diabetes.

How have we failed to teach and to learn the essentials of examining the ocular fundus? All medical students, interns, and residents are expected to examine the eyes of the many inpatients that they "work-up" on their rotations through the inpatient areas of our medical schools. Why have they not perfected the techniques necessary to glean the most possible information from this examination? The fact is that, in most instances, they have not been taught a system for examining eyes that is useful, simple, and covers all of the areas important for diagnostic consideration. We have evolved the teaching of such a system and believe it to be useful for all practitioners in medicine.

The System

Systems are usable insofar as they are rigid and simple. The key to the examination of the ocular fundus is to look successively at the optic disc, the vessels, the macula, and the periphery, gleaning information at each step of the way, and not jumping from one part of the examination to another when interesting lesions are noted. The order of this examination is crucial for the patient and the physician. Each step must be followed in order and all observations should be recorded in the patient's chart.

It is imperative that the physician be comfortable during this examination. He/she cannot be bending over, stretching, or leaning. Similarly, the patient must be relaxed and comfortable. This is best accomplished with the eyes of the patient and the examiner at the same level. The patient can stand or sit on the edge of the examining table or bed which should equalize eye height between the doctor and patient.

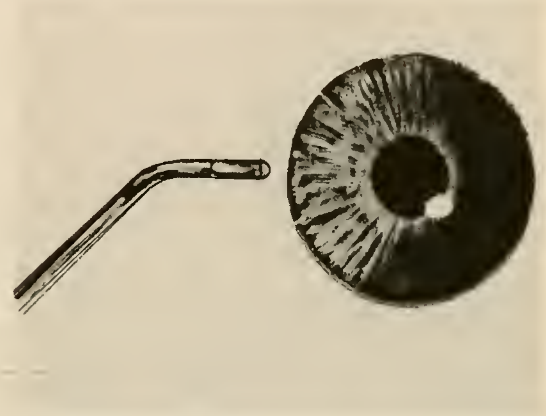

Figure 1. *In trying to determine whether anterior chambers are shallow, a hand light is held at the temporal side of the eye in a plane parallel to the plane of the iris. If the iris comes forward, as seen in this picture, the nasal side of the iris will be shadowed. These patients may have narrow angle glaucoma, but their ocular fundus still needs to be examined.*

Pupillary dilatation is an absolute. One drop of Tropicimide 1% and one drop of Neosynephrine 2½%, given one-half hour before the examination allows for good dilatation and quick recovery therefrom. The danger of precipitating an attack of narrow angle glaucoma is approximately 0.2-0.4%. That is, two to four patients per thousand may have anterior chambers narrow enough to have a significant rise in their intraocular pressure. These patients can be detected by shining a hand light from the temporal side of the eye parallel to the plane of the iris. If the nasal iris is shadowed, it may be that the iris comes forward and the chamber is shallow (figure 1). If there is great fear that acute glaucoma may be precipitated, the patient should be referred to an ophthalmologist for fundus examination. Once the examination is begun, nothing

THE SYSTEM

- **Disc**
  - Borders
  - Color
  - Cup/disc
  - Vessel take-off
- **Vessels**
  - Arteries (arterioles)
  - Veins (venules)
  - A-V phenomena
- **Macula**
  - Reflex-fovea
  - Color
  - Horizontal raphe
- **Periphery**

From the Department of Ophthalmology, University of North Carolina, Chapel Hill, NC 27514.

Supported in part by a grant from Research to Prevent Blindness, Inc., New York, NY.

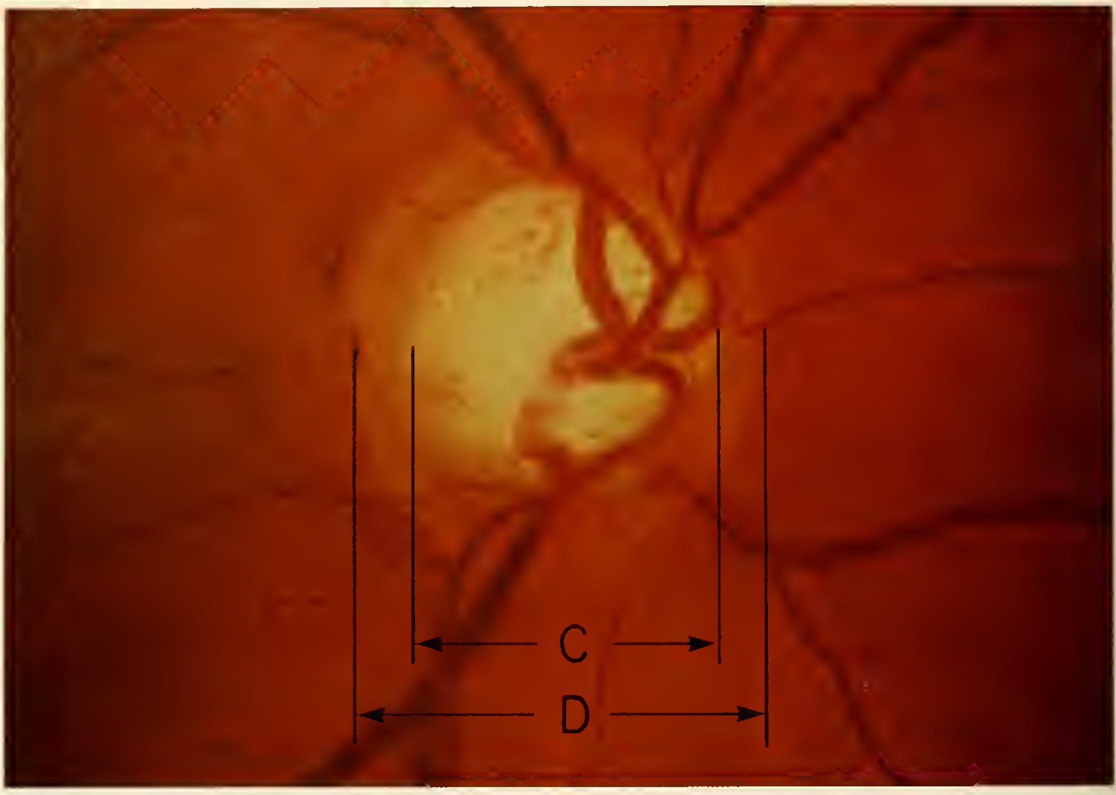

Figure 2. *This photograph of the optic disc shows a very large cup. If one measures the width of the cup using any units, and then measures the width of the disc, the cup/disc ratio can be determined. In this eye the horizontal cup/disc ratio is .6 to .7. The vertical cup ratio should then be measured and will be found to be slightly less than the horizontal.*

should stand in the way of a careful and accurate fundus examination. If there are doubts about the chamber depth, the patient can be told that they may have a problem and a drop of 2% Pilocarpine can be administered at the end of the examination.

Disc

With the patient looking straight ahead, the examiner comes in from the temporal aspect, looking for the optic disc. The disc is situated about 15° off center, the usual direction from which the examiner approaches. The disc is easily found by moving towards the larger caliber of the vessels and by the whiter pupillary reflex as the examination is begun. The disc is a blind spot, and it may be that starting here is more comfortable for the patient.

Once in view, the disc has only a few points that need to be checked. Disc borders should be clearly delineated. The color of the disc should be a grade of pink. Careful examination shows that the pinkness comes from the capillaries on the surface of the disc. Dilated capillaries can make the disc too pink, just as lack of capillaries can make it too white.

The cup of the optic disc is evaluated in terms of its relationship to the size of the disc. That is, if 90% of the disc if taken up by cup, then the cup/disc ration is 0.9. If half the disc is occupied by cup, then it is 0.5. One needs to consider the cup in two planes, the horizontal cup/disc ratio and the vertical cup/disc ratio. The latter is probably more important since vertical cupping is one of the early signs of glaucomatous damage to the disc (figure 2). Cup/disc ratios of 0.4 or less should be noted. For larger cups, the examiner should note both vertical and horizontal cup/disc ratios. Also, it is extremely important to note and to investigate cup/disc ratios that vary in the two eyes by more than 0.2.

The shape of the disc is almost round or slightly oval in a vertical meridian. There is frequently a temporal crescent of depigmentation at the edge of the disc, especially in myopes. Grading the size of discs is almost impossible, but a variance in size between the two eyes may be extremely important.

Lastly, the configuration of the vessels on the disc should be noted. There are many normal varieties of vessel configurations, but peculiar ones should be recorded. The easiest way to preserve observations of abnormalities for posterity is to draw a picture of the disc in the chart (figure 3). This need not be complex, and it is surprising how valuable these drawings become as a patient is followed in future examinations. Ophthalmologists take pictures of all discs that are unusual and this, too, is a superb method to follow abnormalities.

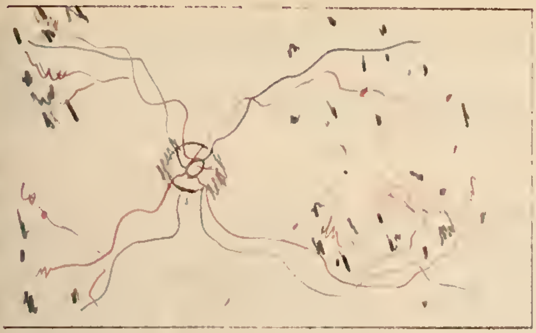

Figure 3. *This is a drawing of the posterior pole of a patient with diabetic retinopathy done by a third year medical student. Features include a normal cup/disc ratio, peripapillary pigmentation, surface neovascularization temporal to the macula, and scattered microaneurysms and intraretinal microvascular anomalies. The black pigmented areas are photocoagulation scars; red shows blood in the arteries, and blue represents the veins. Medical students must learn how to examine the fundus well in their third year.*

Vessels

Once the disc has been fully examined, the examiner then focuses the ophthalmoscope on the superior temporal artery. The purpose is to go "out" the arteries and "in" the veins, following each artery as far as possible, concentrating only on the arterial tree. Having the patient look in the direction the examiner is going will let him see more of the arterial tree. When the examiner has gone as far as possible, he comes back to the disc by observing the veins. The relationship between the arteries and veins should be noted wherever they cross. When the vein is followed back to the disc, the examiner moves to another quadrant, goes out the arteries and in the veins, and does this in each of the four quadrants. Systematic arterial and then venous examination will allow the examiner to see all of the pertinent findings related to most common systemic diseases. Microaneurysms, intraretinal microvascular anomalies, and neovascularization are best detected in this way in diabetic patients.

Macula

At this point, the examiner says to the patient, "look directly at my light." The patient has been suffering from glare and brightness throughout the examination, but is now able to cooperate on the brightest part of the examination. When a patient looks at the light, the examiner is looking at the macula. Points to note about the macula include a check for the foveal reflex and then a check of the general coloration of the central macula. This, in turn, checks the retinal pigment epithelium behind the macula. This is a critical observation for patients with impending or existing senile macula degeneration. In diabetic patients, there are likely to be microaneurysms in the posterior pole and frequently the effects of diabetic maculopathy are seen in a greyness or thickening of the retina. Edema in the retina reduces its transparency and makes it grey. When edema is chronic, there is chronic deposition of lipoprotein within the retina, forming exudates. Exudates are the best evidence we have for chronic edema.

After noting the color of the macula and the presence of vascular anomalies or edema, the examiner should ask the patient to look just temporal to (right or left of) the light. This will allow the examiner to see the area of the horizontal raphe which is the place where diabetic retinopathy first becomes obvious. This area is critically important in the early diabetic who is beginning to advance into preproliferative stages.

Periphery

This examination of the horizontal raphe area is the first part of the examination of the periphery. The periphery, in this system, is simply the area of the retina that has not been covered when looking at vessels. There is not nearly as much information available in the spaces between the vascular arcades, but it is worth checking to rule out tumors, scars, and other spurious lesions not generally associated with the vascular supply. The periphery, in this context, is not necessarily farther anterior in the retina, but simply includes the examination of almost all of the retina behind the equator. Lesions found in the periphery are more difficult to diagram in the patient chart because of the lack of reference to vascular structures. These lesions should be described according to the layers of tissue that are involved in the abnormality. Almost all such lesions involve the retinal pigment epithelium and choroid, so they are noticeable by their sharp changes in color.

Discussion

The proper examination of the ocular fundus is helpful for almost all medical practitioners. Unfortunately, our academic institutions do not teach this technique in a manner that allows for future learning on the part of the young physician. That is to say, medical students seem to learn from this examination during the short time they spend in opthalmology, but, because they do not have a simple system to work with, they quickly forget the important features of the ocular exam. In learning to look at the disc, vessels, macula, and periphery in the manner described above, students can learn to make observations and to record them, without actually knowing what they are looking at. With this system, they know exactly where to look and what the normal appearance should be. Variances from normal become topics of interest and incentives for learning. The astute medical student or young practitioner using this system then begins to question and delve further into the nuances of findings discovered during the examination. The obvious analogy of learning to walk before learning to run, or learning to read before learning to understand, are clear. Young physicians who are willing to follow the stepwise system for examining the fundus are an inquisitive group, and they soon learn to question and investigate abnormal findings.

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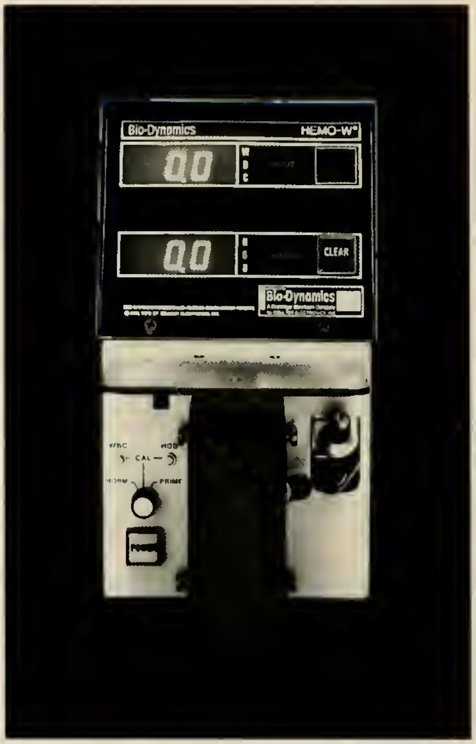

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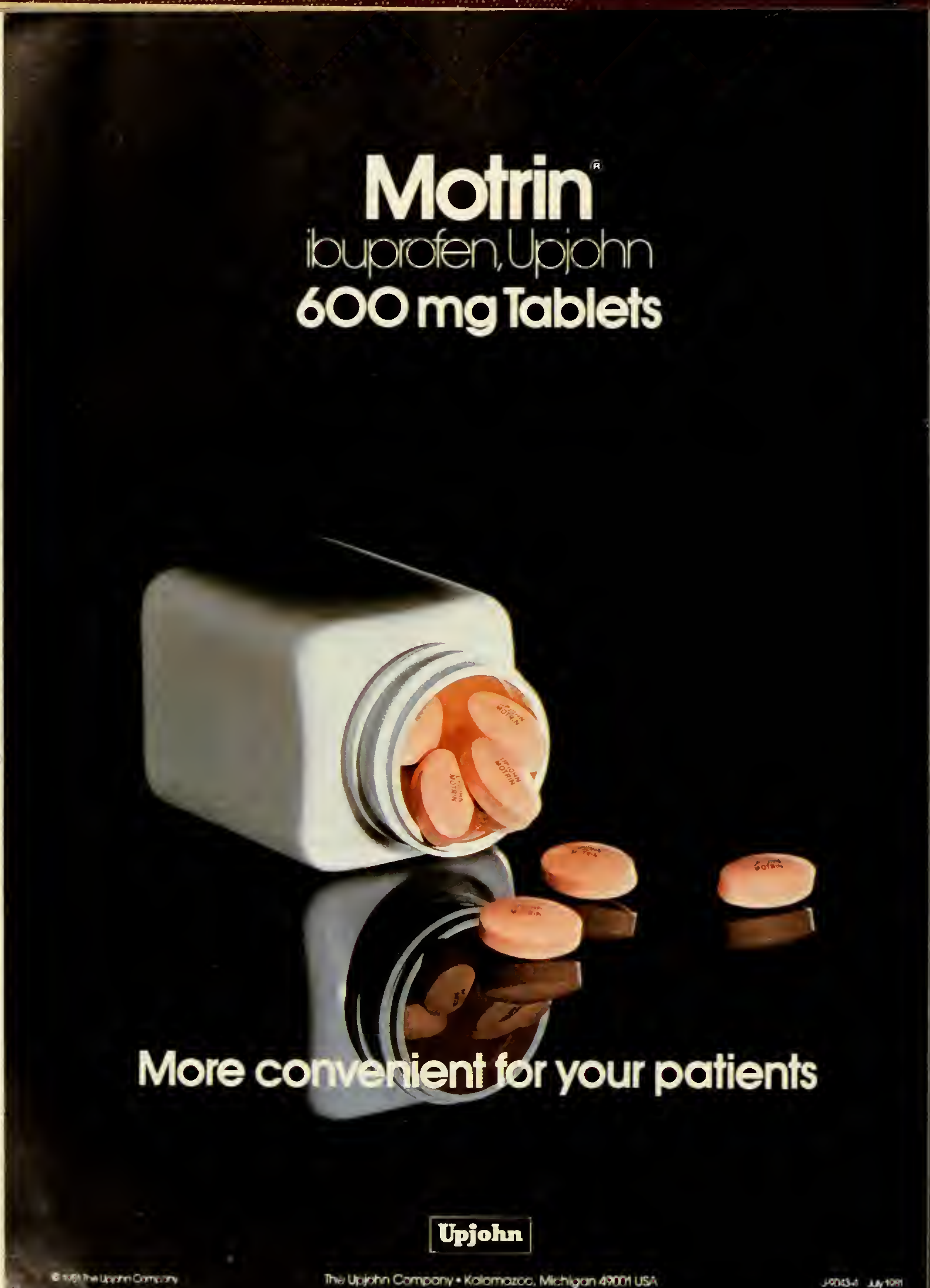

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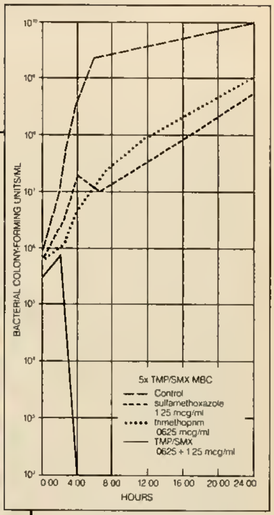

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cephalexin†	81% 343,339	85% 67,031	92% 67,027	16% 4398	80% 4365	22% 1834	13% 7571	12% 11,846
nitrofurantoin	97% 307,785	65% 61,162	7% 59,775	13% 3848	14% 3059	67% 1707	60% 7109	67% 10,830

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Indications and Usage: For the treatment of urinary tract infections due to susceptible strains of the following organisms: *Escherichia coli, Klebsiella-Enterobacter, Proteus mirabilis, Proteus vulgaris, Proteus morganii.* It is recommended that initial episodes of uncomplicated urinary tract infections be treated with a single effective antibacterial agent rather than the combination. *Note:* The increasing frequency of resistant organisms limits the usefulness of all antibacterials, especially in these urinary tract infections.
For acute otitis media in children due to susceptible strains of *Haemophilus influenzae* or *Streptococcus pneumoniae* when in physician's judgment it offers an advantage over other antimicrobials. To date, there are limited data on the safety of repeated use of Bactrim in children under two years of age. Bactrim is not indicated for prophylactic or prolonged administration in otitis media at any age.
For acute exacerbations of chronic bronchitis in adults due to susceptible strains of *Haemophilus influenzae* or *Streptococcus pneumoniae* when in physician's judgment it offers an advantage over a single antimicrobial agent.
For enteritis due to susceptible strains of *Shigella flexneri* and *Shigella sonnei* when antibacterial therapy is indicated.
Also for the treatment of documented *Pneumocystis carinii* pneumonitis.
Contraindications: Hypersensitivity to trimethoprim or sulfonamides; patients with documented megaloblastic anemia due to folate deficiency; pregnancy at term; nursing mothers because sulfonamides are excreted in human milk and may cause kernicterus; infants less than 2 months of age
Warnings: BACTRIM SHOULD NOT BE USED TO TREAT STREPTOCOCCAL PHARYNGITIS. Clinical studies show that patients with group A β-hemolytic streptococcal tonsillopharyngitis have higher incidence of bacteriologic failure when treated with Bactrim than do those treated with penicillin. Deaths from hypersensitivity reactions, hepatocellular necrosis, agranulocytosis, aplastic anemia and other blood dyscrasias have been associated with sulfonamides. Experience with trimethoprim is much more limited but occasional interference with hematopoiesis has been reported as well as an increased incidence of thrombopenia with purpura in elderly patients on certain diuretics, primarily thiazides. Sore throat, fever, pallor, purpura or jaundice may be early signs of serious blood disorders. Frequent CBC's are recommended; therapy should be discontinued if a significantly reduced count of any formed blood element is noted
Precautions: *General:* Use cautiously in patients with impaired renal or hepatic function, possible folate deficiency, severe allergy or bronchial asthma. In patients with glucose-6-phosphate dehydrogenase deficiency, hemolysis, frequently dose-related, may occur During therapy, maintain adequate fluid intake and perform frequent urinalyses, with careful microscopic examination, and renal function tests, particularly where there is impaired renal function. Bactrim may prolong prothrombin time in those receiving warfarin; reassess coagulation time when administering Bactrim to these patients.
Pregnancy: Teratogenic Effects: Pregnancy Category C Because trimethoprim and sulfamethoxazole may interfere with folic acid metabolism, use during pregnancy only if potential benefits justify the potential risk to the fetus.
Adverse Reactions: All major reactions to sulfonamides and trimethoprim are included, even if not reported with Bactrim. *Blood dyscrasias.* Agranulocytosis, aplastic anemia, megaloblastic anemia, thrombopenia, leukopenia, hemolytic anemia, purpura, hypoprothrombinemia and methemoglobinemia *Allergic reactions:* Erythema multiforme, Stevens-Johnson syndrome, generalized skin eruptions, epidermal necrolysis, urticaria, serum sickness, pruritus, exfoliative dermatitis, anaphylactoid reactions, periorbital edema, conjunctival and scleral injection, photosensitization, arthralgia and allergic myocarditis *Gastrointestinal reactions:* Glossitis, stomatitis, nausea, emesis, abdominal pains, hepatitis, hepatocellular necrosis, diarrhea, pseudomembranous colitis and pancreatitis *CNS reactions:* Headache, peripheral neuritis, mental depression, convulsions, ataxia, hallucinations, tinnitus, vertigo, insomnia, apathy, fatigue, muscle weakness and nervousness. *Miscellaneous reactions:* Drug fever, chills, toxic nephrosis with oliguria and anuria, periarteritis nodosa and L.E phenomenon. Due to certain chemical similarities to some goitrogens, diuretics (acetazolamide, thiazides) and oral hypoglycemic agents, sulfonamides have caused rare instances of goiter production, diuresis and hypoglycemia in patients; cross-sensitivity with these agents may exist. In rats, long-term therapy with sulfonamides has produced thyroid malignancies
Dosage: *Not recommended for infants less than two months of age.*
URINARY TRACT INFECTIONS AND SHIGELLOSIS IN ADULTS AND CHILDREN, AND ACUTE OTITIS MEDIA IN CHILDREN
Adults: Usual adult dosage for urinary tract infections—1 DS tablet (double strength), 2 tablets (single strength) or 4 teasp. (20 ml) b.i.d for 10-14 days Use identical daily dosage for 5 days for shigellosis.
Children: Recommended dosage for children with urinary tract infections or acute otitis media—8 mg/kg trimethoprim and 40 mg/kg sulfamethoxazole per 24 hours, in two divided doses for 10 days. Use identical daily dosage for 5 days for shigellosis
For patients with renal impairment. Use recommended dosage regimen when creatinine clearance is above 30 ml/min. If creatinine clearance is between 15 and 30 ml/min, use one-half the usual regimen. Bactrim is not recommended if creatinine clearance is below 15 ml/min.
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Usual adult dosage: 1 DS tablet (double strength), 2 tablets (single strength) or 4 teasp. (20 ml) b.i.d for 14 days
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Recommended dosage: 20 mg/kg trimethoprim and 100 mg/kg sulfamethoxazole per 24 hours in equal doses every 6 hours for 14 days. See complete product information for suggested children's dosage table.
Supplied: *Double Strength (DS) tablets*, each containing 160 mg trimethoprim and 800 mg sulfamethoxazole, bottles of 100 and 500, Tel-E-Dose® packages of 100; Prescription Paks of 20. *Tablets*, each containing 80 mg trimethoprim and 400 mg sulfamethoxazole—bottles of 100 and 500; Tel-E-Dose® packages of 100, Prescription Paks of 40. *Pediatric Suspension*, containing 40 mg trimethoprim and 200 mg sulfamethoxazole per teaspoonful (5 ml); cherry flavored—bottles of 100 ml and 16 oz (1 pint) *Suspension*, containing 40 mg trimethoprim and 200 mg sulfamethoxazole per tea spoonful (5 ml); fruit-licorice flavored—bottles of 16 oz (1 pint)

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SCIENTIFIC ARTICLE

Dehiscence or Tear of the Levator Aponeurosis as a Cause of Ptosis in Children

J. Richard Marion, M.D.

PTOSIS, or more properly blepharoptosis, refers to an abnormal drooping of the upper eyelid. Normally the margin of the upper eyelid rests about one to two mm below the upper limbus (i.e., the junction between the cornea and the sclera). Congenital ptosis, as this term is used in this paper, refers to a congenital absence or deficiency of striated muscle fibers in the levator palpebrae superioris. There are other etiologies of ptosis which can be congenital in origin and which include congenital Horner's syndrome and congenital III cranial nerve paralysis.

In recent years our knowledge of the precise anatomy of the eyelids and the levator aponeurosis has increased greatly.[1] The levator palpebrae superioris originates just above the anulus of Zinn in the posterior orbit and is connected to the origin of the underlying superior rectus muscle. The levator muscle itself progresses forward along the roof of the orbit and just above the superior rectus muscle. The levator muscle becomes the levator aponeurosis (which is basically a fascia-like structure which acts somewhat like a tendon) approximately 10 to 15 mm above the superior tarsal border. This aponeurosis then passes downward and inserts into the lower third of the tarsal plate and also into the pretarsal part of the upper eyelid skin. It has been appreciated only for the past few years that ptosis can be caused by a tear in the levator aponeurosis. This condition is now a well-recognized cause of ptosis in adults and is acquired, especially following ophthalmic surgery or trauma, and in elderly patients as an aging change. Factors that favor the presence of a tear in the levator aponeurosis in patients with ptosis include a history of prior orbital swelling (i.e., orbital cellulitis, ocular surgery, trauma, blepharochalasis), good levator function (10 mm or more), a high or absent upper lid fold, a thinning of the eyelid above the superior tarsus.

In congenital ptosis the problem is present at birth and this history can be reinforced by photographs showing ptosis at an early age. On down gaze a congenitally ptotic lid will rest in a higher position than the normal lid due to fibrosis and poor relaxation of the levator muscle. This is called lid lag and is an important sign in differentiating congenital ptosis from acquired ptosis. Levator function is tested and found in congenital ptosis to be less than the normal range of 14-16 mm. Levator function is measured with a millimeter ruler by noting the excursion of the upper lid margin from extreme down gaze to extreme up gaze. Firm pressure should be applied to the brow with the thumb to prevent any upward movement of the lid due to contraction of the frontalis muscle.

Causes of ptosis other than a congenital defect of the levator muscle or an acquired tear in the levator aponeurosis must be considered. These include myesthenia gravis and Marcus-Gunn's jaw-winking phenomenon.

Surgical correction of patients with congenital ptosis is quite different from the surgical procedure used to correct a tear in the levator aponeurosis. If one attempts to correct a tear in the levator aponeurosis using a technique designed for repair of congenital ptosis, it is quite likely that the patient will be over-corrected. Surgical correction by direct repair of the tear in the aponeurosis has been well described by Anderson.[2] This technique provides a precise anatomical approach to the affected structures and preserves normal lid function as well as other important structures in the eyelid which are sacrificed or damaged by other forms of ptosis surgery (i.e., tear-producing structures, Muller's muscle, and conjunctiva). Two cases are presented that illustrate this condition.

Case 1: An 8-year-old male was seen on 9-17-81 with a 3 mm ptosis of his left upper lid and excellent levator function in both upper lids. No lid lag was noted in down gaze. He had sustained an acid burn to his left cornea three years previously and his mother noted the onset of ptosis following this injury. Visual acuity was 20/20 O.D. and 20/25 O.S. Other pertinent ocular findings included a corneal pannus in the left eye and a small symblepharon as well. The left upper lid was explored through an incision in his upper lid fold and a tear of his levator aponeurosis was found and repaired. Postoperatively he has done well with elimination of his ptosis and a good costmetic result.

Case 2: A 14-year-old-black male was first seen on 5-3-83 at which time his parents gave a history of bilateral ptosis since a very early age. By history he had undergone an external levator resection for congenital ptosis of the right upper lid in 1978 without problems. It was interesting to note that he had experienced episodes of erythema and edema of both lids at an early age. Examination on 5-3-83 revealed a visual acuity of 20/20 O.U. The right upper lid showed no ptosis and 14 mm of levator function. The left upper lid showed 4 mm of ptosis and 15 mm of levator function. No significant lid lag was present on down gaze in either eye. No operative note is available for the procedure he underwent on his right upper lid in 1978, but it is interesting that he obtained such a good result following a procedure for congenital ptosis when in actuality he does

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not have a congenital ptosis. Apparently a very small external levator resection was performed, giving him an adequate result. His left upper lid was explored on 6-27-83 at which time a tear in his levator aponeurosis was easily identified and repaired. One week postoperatively he had no ptosis and a good cosmetic result.

Summary

Two cases of levator aponeurosis tears in children are presented. One case had previously been mistaken for congenital ptosis and had undergone a surgical correction of one upper lid. It is important to recognize that all ptosis in children is not congenital. A good history and ocular examination are of great value in determining the etiology of a ptotic lid in a child.

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SCIENTIFIC ARTICLE

Conjunctival Biopsy in Sarcoidosis: 4 Year NCMH Experience

John C. Merritt, M.D., Gregory Ross, B.S., and Andrea Avery, B.S.

SARCOIDOSIS, a multisystem granulomatous disease of unknown etiology, commonly affects Afro-Americans residing in the southeastern United States. Immunogenetic factors, which may be inherently present within North Carolina Afro-Americans, may allow later susceptibility to ocular sarcoidosis due to environmental exposures (pine produce, textile, rural inhalation). HLA studies have, however, failed to demonstrate any antigenic differences in 41 North Carolina Afro-Americans with sarcoidosis.[1]

Ophthalmologists often institute primary care in North Carolina since the eyes are frequently the organ with symptomatology (photophobia, burning). The dermatologist visualizes a variety of skin lesions varying from acne to lupus perino. Since 94% of sarcoidosis patients will have their lungs affected at some time within the disease course,[2] internists and primary care physicians should be aware of its characteristic pulmonary and ocular changes. At North Carolina Memorial Hospital, the primary diagnostic procedures performed to diagnose sarcoidosis by excisional biopsies are extra-thoracic. This brief report describes conjunctival biopsies to diagnose sarcoidosis, and discusses these results in light of confounding therapeutic variables present and unique within North Carolina.

Fifty-three subjects in whom the differential diagnosis included sarcoidosis were unilaterally biopsied by single conjunctival excision. Exact description of conjunctival biopsy has been provided elsewhere.[3] Fifty subjects had conjunctival follicles present at the slit lamp, which were excised under direct visualization. Blind conjunctival biopsies, those done where no conjunctival follicles were visualized, were performed in only three subjects. These blind conjunctival excisions were performed as diagnostic aids to acutely ill in-patients in whom primary care physicians needed help to establish a diagnosis. Twenty were males and 33 were females; 47 were Afro-Americans and six were white. The mean age at biopsy for males was 26.7 ± 3.1 years (mean ± standard error); the mean age for females was 25.5 ± 1.6 years. In the 50 subjects where conjunctival follicles were visualized, 18 revealed granulomas consistent with sarcoidosis in excised conjunctival specimens (36%). Two of these subjects, whose conjunctival tissue revealed no sarcoidosis granulomas, exhibited biopsy positive granulomas from lids and minor salivary gland.

Differential diagnosis for the negative biopsy group included 35 patients. Ten subjects who had negative biopsies, yet with clinical evidence of ocular sarcoidosis, were using topical steroids immediately prior to the conjunctival excisional biopsy. An additional seven patients with negative conjunctival biopsies were taking systemic steroids. Six subjects of the 34 negative biopsies were later found to have the following diagnoses: ankylosing spondylitis (1), juvenile rheumatoid arthritis (3), and toxoplasmosis (2). The remaining 29 patients were found to have a nonspecific diagnosis of either chronic non-granulomatous follicular conjunctivitis or chronic non-granulomatous inflammation. It should be remembered that within eastern North Carolina juvenile rheumatoid arthritis is often confused with childhood sarcoidosis.

The common usage of topical steroids by ophthalmologists, optometrists and primary care physicians within

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North Carolina may distinctly alter the numbers of positive biopsies obtained at North Carolina Memorial Hospital in Chapel Hill. Conjunctival biopsies historically have been safe procedures, though rates of positive biopsies may depend on numerous variables.

Most series reported 30-50% positive rates where conjunctival follicles are visualized,[3-10] though concomitant use of steroids may lessen these results.[4] "Blind" conjunctival biopsies (those performed where no suggestive lesions are seen) rarely produce positive granuloma. Karma blindly performed conjunctival biopsy in 152 Finnish subjects, and pathologic specimens revealed granulomas consistent with sarcoid in only 10 subjects (6%). To date, no complications have been reported in any series. If primary care personnel abstain from topical and systemic steroids and replace these therapies by more benign cycloplegia therapy, would the rates of positive biopsies increase within our institution?

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TOXIC ENCOUNTERS

Phenomenally Phunny Phungi — Psilocybin Toxicity

Ronald B. Mack, M.D.

I always believed that the mushrooms desired most by cognoscenti were truffles — the French fungus dug out of the ground by the snouts of trained pigs. However, a recent episode in a University nearby (no names, do you think Mrs. Mack raised a fool?) brought to light another very expensive mushroom — selling for about $1650.00 per pound. I would not recommend trying to purchase this little number at your local Winn-Dixie or deli because it's not quite legal. The students who were arrested for growing these little delights in a small aquarium probably knew that there was a great market for this substance by those sophisticates who wanted to take a ''trip'' without ever leaving the house. These gentleman/gentlewoman farmers were growing mushrooms containing *psilocybin.*

Psilocybin (sillo-sybin) and the closely related chemical *psilocin* (sillosin) are hallucinogenic indoles found mainly in the Psilocybe and Conocybe mushrooms. These two substances are quite similar chemically and pharmacologically, but psilocin is 1.5 times more powerful. These mushrooms do not normally grow wild in North Carolina but are indigenous to Florida, Georgia and especially Mexico. Typically this festive fungus grows in moist tropical-type areas and appear to grow almost overnight in cow pastures after a rainfall. (Possibly ''meadow muffins'' help them grow). Could you recognize one of these gustatory delights if you saw one? I couldn't!! The genus Psilocybe includes many small mushrooms, many with conical caps, long thin stipes (the stipe is the long stalk or stem supporting the cap), attached gills and chocolate brown or purple brown spore prints (spores are the minute reproductive structures produced in millions on the undersurface of the gills). Apparently the spores represent the least variable and most distinctive characteristic of a mushroom. Spore prints are produced by placing them on a piece of filter paper so that the color and distribution can be studied. Color of spores is thought to be constant for a species. The spores are examined under the microscope at high power and oil immersion. When the stipe (stem) of the hallucinogenic species is bruised, a blue stain appears and this characteristic may assist in identification.

Why would someone consume these phunny mushrooms anyway? For those of us whose major encounter with mushrooms is in a pizza it might seem strange that people have been swallowing this stuff in Central America and Mexico for thirty-five hundred years. Well, I won't hold you in suspense any longer. These fungi, known best by the term ''magic mushrooms,'' produce altered states of consciousness. That is to say, psilocybin and psilocin produce in the user rather vivid visual hallucination-like experiences as well as synesthesias (a parodoxical distortion of the senses so that, for example, ''sounds'' can be seen). The hallucinogenic dysphoric state begins within about 30-60 minutes of ingestion of the mushrooms and lasts less than 4-6 hours. Five to 15 mg of psilocybin, which equals about 10-30 grams of the mushrooms, is required for this kind of trip. Psilocybin is considered valuable by ''those in the know'' because it allegedly produces experiences subjectively considered mystical. The induced mood may be very pleasant or anxiety producing (good vs bad trip). While under the influence of these funny fungi, the user exhibits poor judgment (one could argue that the poor judgment occurred when deciding to take the mushroom in the first place), shows poor performance ability, demonstrates unmotivated hyperkinetic compulsive movements, can have vertigo, ataxia, mydriasis, muscle weakness, paraesthesias, and drowsiness progressing to sleep.

It is obvious that psilocybin users take the preparation not for its bad effects, but because it allows them to achieve a different plane of being. Typical ''trips'' are described as follows: The first hour of altered consciousness reveals sharp outlines of objects with brilliant colors and changing scenes visualized with the eyes closed. In the second hour the colors intensify often forming patterns, like bursts of fireworks, sometimes superimposed on dream-like shapes which rapidly appear and disappear. During the third hour the hallucinations disappear gradually and nausea, vomiting, and paralysis may occur. These effects as described result from a dose of 5 to 15 mg. In order to produce a ''trip'' similar to LSD, 150-200 times the amount (by weight) of psilocybin is needed. Tolerance to the psychoactive effects of psilocybin occurs quite readily and the steady user must periodically discontinue use in order to regain sensitivity. Physical and/or psychological dependence apparently do not occur.

If the above description is that of a ''good trip,'' what is a ''bad trip'' like for goodness sake? A ''bad trip'' can produce feelings of nonexistence or of disintegration of the self, paranoid thinking, severe agitation with or without depression, panic terror, and inability to distinguish the real from the unreal (Gee, I know people who get that way when they eat regularly in the hospital cafeteria). The adverse

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physical manifestations of a psilocybin trip as seen by a health care professional include hypertension, tachycardia, fever, diaphoresis (followed by chills and shivering), as well as nausea, vomiting, and abdominal cramps.

Psilocybin can be purchased in a variety of forms, e.g., crude, mushroom preparations sold either as intact dried brown mushrooms or as a powdered material in capsules or, in its pure form, synthetic psilocybin is a white crystalline material sold in the form of capsules, tablets, or solution. The mushroom can be ingested in a fresh or dried state whereas the synthetic form can be taken orally in tablets, capsules, or juice. Mixing the synthetic powder with fruit juice is a very popular preparation. Psilocybin can also be injected, sniffed, or smoked. IV use of the mushroom is frowned upon as unwise. For those of you who have never tried some psilocybin and want to rush out and buy some, "street" psilocybin these days is usually LSD or PCP or a similar cheaper psychostimulant substance. Psilocybin is rarely found on the street drug market in most areas of the United States. These mushrooms are really for cognoscenti.

From a medical standpoint, psilocybin rarely causes trouble in a sophisticated user. It is considered by many authorities to be relatively safe hallucinogen. Death has not been reported in adults from overdose. In a latent psychotic individual it has produced a paranoid schizophrenic state similar to PCP use. It is difficult to get chronically "hooked" on this drug as complete tolerance to the mind altering effects occurs after it has been taken for several consecutive days. Dependence probably does not occur and thus its potential for abuse is quite low.

Of course, there are no antidotes for this fungus taken in overdose. The treatment is largely supportive. Some authors suggest the use of chlorpromazine for the acute psychotic state unless a mixed overdose has occurred where Thorazine would be contraindicated (e.g., PCP). Reassurance, i.e., "talking the patient down," seems to be quite effective.

Before leaving the subject of the "magic mushroom" I should point out that children who ingest psilocybin accidently can have a different toxic encounter resulting in *hyperpyrexia* and *tonic-clonic seizures*. This rather frightening state can be treated with diazepam.

My brother is developing a pig that will identify these mushrooms and dig them up, but he says it's very hard to do with the guards watching.

**The signals may be subtle.
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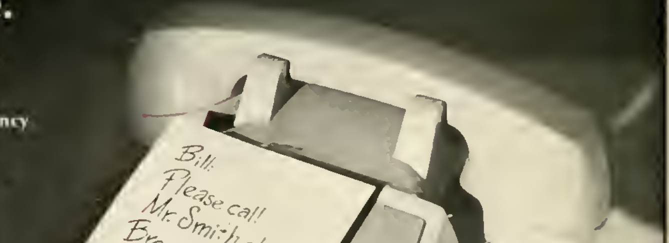

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CAROLINA HISTORY

A Brief History of Ophthalmology in North Carolina

Samuel D. McPherson, Jr., M.D.

Dr. Samuel D. McPherson, Sr.

A little over a century ago, George W. Graham, M.D., an Eye, Ear, Nose and Throat specialist, opened his office in Raleigh. The first such specialist in the state did not enjoy a major competitive advantage in Raleigh for, after seven years of practice, he decamped in 1880 to Charlotte. EENT specialization became increasingly popular in an era when every family had at least one member with a chronic draining ear, inflammed mastoid, or "tonsillitis." (The "Eye" in the specialty designation indicated that spectacles might be provided for those who did not wish to pick them out of dime store racks.) By 1916, Kemp Plummer Battle, Jr., M.D. was moved to announce at the annual meeting of the Medical Society that the field was overcrowded, there being 79 EENTers in the state at the time.

From Dr. Battle's point of view the change had been great. He had joined his brother-in-law, R. H. Lewis, who in 1877 had started the second EENT practice in the state. Like his predecessor, Dr. Graham, Dr. Lewis was a product of the University of North Carolina and the University of Virginia Medical School and had obtained his specialty training in Baltimore with Dr. J. J. Chisolm, well known for his work in ambulatory cataract surgery. The year of Dr. Battle's address to the Medical Society was noteworthy also for the formation of the world's first specialty board, The American Board of Ophthalmology. Although residencies in EENT continued until after World War II, the identity of Ophthalmology as a separate discipline was established.

Progress was certainly needed. In 1914 Mr. John Ray of the North Carolina School for the Blind pointed out that almost a quarter of his 404 enrollees had been blinded by gonorrheal ophthalmia. He begged at the State Medical Society meeting that the profession dose each newborn with freshly prepared silver nitrate drops and endorse this

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From McPherson Hospital, 1110 West Main Street, Durham, NC 27701.

Dr. W. Banks Anderson, Sr.

prophylaxis. Perhaps his address may have had a "consciousness raising" effect for the membership, which had previously resisted the creation of an EENT section, relented and in 1915 it came into being. The "E," however, was not split from the "ENT" until 1974 when members separated into sections of ophthalmology and otolaryngology.

Ophthalmology As A Specialty

Well-known ophthalmologists of the early 1900s included Dr. Henry H. Briggs, Sr. of Asheville, the first North Carolina member of The American Ophthalmological Society; Dr. Henry Sloan of Charlotte; Dr. J. P. Matheson, founder of the Charlotte Eye and Ear Hospital; Dr. Samuel D. McPherson, Sr. of Durham, founder of McPherson Hospital; and Dr. W. Banks Anderson, a nephew of Dr. McPherson and staff member of McPherson who became the first professor of ophthalmology at Duke.

Ophthalmology and otolaryngology were given great impetus as individual specialties with the founding of the Charlotte Eye and Ear Hospital in 1923 and McPherson Hospital in Durham in 1926. Both institutions have continued since that time with large specialty staffs who have made substantial contributions to ophthalmology in North Carolina. McPherson Hospital, being geographically closer to teaching institutions, has been the more involved in education, and from its staff has produced three full professors of ophthalmology.

Modern Era

Changes in medical education had a profound effect on ophthalmology. A move to discourage the creation and continuation of two-year medical schools resulted in the creation of four four-year medical schools in North Carolina. A senior class at the new Duke medical school was graduated in 1932, at Bowman Gray in 1943, at the University of North Carolina in Chapel Hill in 1954, and at East Carolina University in 1981. Ophthalmologists with academic interests were recruited to North Carolina schools and did much to elevate North Carolina ophthalmic practice. Dr. Banks Anderson, a Massachusetts Eye and Ear graduate who was on the staff of the McPherson Hospital, became the first professor of Ophthalmology at Duke. This was originally a part-time appointment. He continued at both institutions until 1944 when he joined the full-time staff at Duke. In 1942, Dr. Frederick Stocker, a well-known Swiss ophthalmologist who worked at the Presbyterian Hospital in New York and was then at the Wilmer Institute in Baltimore, joined the staff of McPherson Hospital and subsequently became a full professor, part-time at Duke.

In 1951 the North Carolina Eye Bank was formed largely through the efforts of Dr. L. B. Holt of Winston-Salem. It served as a great resource for much of the clinical and investigational work that followed.

The EENT training program at Duke had by the late 1950s produced an appreciable number of excellent specialists for the state. The growth of ophthalmology as a discipline continued, and in 1959 Ophthalmology was established as a specialty in its own right. One "E" disappeared from EENT. In 1947 Dr. Winston Roberts, then an assistant resident at Duke, moved to Winston-Salem where he completed his training under Dr. William P. Speas of the Bowman Gray School of Medicine. In 1948 Dr. S. D. McPherson, Jr. joined the staff of McPherson Hospital from the Wilmer Institute, and in 1949 the combined programs at McPherson and Duke were separated, with the McPherson ophthalmology program being approved separately. In 1952 when the School of Medicine at Chapel Hill was expanded to four years, the residency in Ophthalmology at McPherson Hospital became responsible for the service at North Carolina Memorial Hospital in Chapel Hill. In 1955 this was formalized into a two-institution residency in Ophthalmology with Dr. McPherson as chairman of both. In 1969 Dr. Hermann Burian of Iowa City joined the staff at UNC and his stimulating teaching continued until his death in 1974. The departmental library to which he donated his fine personal collection is named for him. During the first 20 to 25 years much of the didactic teaching and clinical research was done jointly at Duke, the University of North Carolina, and McPherson Hospital.

Ophthalmology training programs existed at four institutions in the state. At Bowman Gray, Dr. Roberts continued as chief of the section in ophthalmology until he was succeeded by Dr. Richard Weaver in 1975. At Duke, Dr. Anderson continued as ophthalmology chief until he was succeeded by Dr. Wadsworth in 1965. At McPherson and North Carolina Memorial, Dr. McPherson was chief until 1976 when he was succeeded at Memorial by Dr. Lawrence Moore and later by Dr. David Eifrig. In 1981 the training program at McPherson rejoined that at Duke as a combined program with residents being rotated between the two institutions and the Durham and Oteen Veterans Hospitals.

Much of the clinical and experimental investigation of corneal transplantation was undertaken by Dr. Stocker and his associates at McPherson and Duke. The first corneal transplants in this area were done by Dr. Stocker at McPherson Hospital. In the decades of the '60s and '70s, many presently used concepts, techniques and instruments of ophthalmic microsurgery were also developed at McPherson Hospital.

With the arrival of Dr. Wadsworth at Duke in 1965, a new stimulus for academic ophthalmology was provided. In that same year Ophthalmology, which had been a division of Surgery, became a full department at Duke, and plans were first made for a separate eye building. Dr. Wadsworth was successful in raising funds and the building named for him opened in 1973. Space was provided for new faculty members, and additional laboratory spaces, which were previously limited, were now available. Dr. Banks Anderson, Jr., a professor and son of the former chief of Ophthalmology, remained on the staff at Duke, providing a thread of continuity with the past for the future.

In 1978 when Dr. Wadsworth retired as departmental chairman, Dr. Robert Machemer of Miami was appointed his successor as professor and chairman of the Department of Ophthalmology at Duke. Under his direction, new faculty members were added with expertise in vitreous, corneal, and retinal surgery. Dr. Machemer's reputation in vitreoretinal surgery attracted patients from throughout the United States and foreign countries.

Meanwhile in Chapel Hill, Dr. David Eifrig who succeeded Dr. Moore in 1977 continued the training programs at North Carolina Memorial Hospital and recruited new faculty members with a variety of subspecialty interests. The older institutions continued to prosper. The management of the Charlotte Eye and Ear, which had previously been locally controlled, was taken over by Humana, a hospital corporation. McPherson Hospital ownership and control remained in the hands of the physicians who work there. Several new ambulatory ophthalmic surgical centers were planned and opened as outpatient and extracapsular cataract surgery underwent the process of rediscovery. Our youngest medical school, East Carolina University School of Medicine, has not as yet developed a graduate program in ophthalmology.

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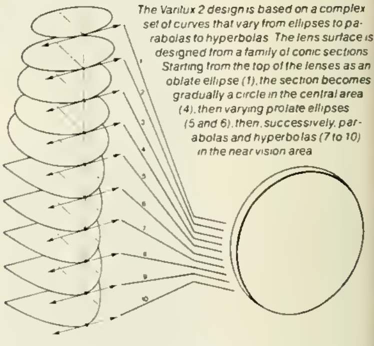

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Features for Patients

Some Facts about Your Eyes: A Health Quiz for Physicians and Their Patients

M. Bruce Shields, M.D.

There are many common misconceptions about our eyes, some of which may prevent us from fully enjoying our gift of sight or may even lead to permanent damage to our vision. The following true or false quiz includes several of the more important points concerning eye health. We have given it to our Duke medical students as a pre-course examination to assess their knowledge before they take their course in Ophthalmology. You might like to see how you fare with the quiz, and then we will discuss the answers.

Quiz

1. Reading for prolonged periods in dim light can be harmful to the eyes.
2. Wearing glasses that are too strong can cause damage to the eyes.
3. Children should be taught not to hold their books too close to read since this can harm the eyes.
4. If children sit too close to the television they can damage their eyes.
5. Older people who may be having trouble seeing should not use their eyes too much since they can wear them out sooner.
6. People with weak eyes should rest their eyes often in order to strengthen them.
7. Children will likely outgrow crossed eyes if a little time and patience are given.
8. Children who have a problem learning to read are likely to have an eye coordination problem and can be helped with special exercises.
9. A cataract is actually a film over the eye which can be peeled off with surgery.
10. Cataracts have to be "ripe" before surgery can be done.
11. Cataracts can grow back sometimes after cataract surgery.
12. Glaucoma only occurs in people over 40 years of age.
13. Contact lenses are good for correcting nearsightedness so that eventually neither lenses nor glasses will be needed.
14. Rarely, contact lenses can get lost behind the eye and even get into the brain.
15. A sign of healthy eyes in old people is their ability to read the newspaper without glasses.
16. People who wear glasses should be checked every year to see if a change is needed.
17. Dark glasses should be worn on a bright day since bright sunlight can harm your eyes.
18. Ideally more people should use an eye wash regularly to clear their eyes.
19. A blue eye should not be used for transplanting into a brown-eyed person.
20. Headaches are usually due to eyestrain.

Answers and Discussion

If you said that 15 of the statements were false and 5 were true, your grade is a C. If you decided that only 3 statements were correct, give yourself a B. You deserve an A if you concluded that 1 or none were true, since all of the above statements are false.

From the Department of Ophthalmology, Duke University Medical Center, Durham, NC 27710.

Illustrations by Ernest Craige, M.D.

Let us all now consider each question in the order presented in the quiz.

1. If reading for prolonged periods in dim light were harmful to our eyes, Abraham Lincoln would probably not have had sufficient eyesight to have become our sixteenth president. This is not to say, however, that good lighting is not important in preventing eye fatigue, and we should all be encouraged to read with good lighting, preferably coming from over our shoulder.

2. It is a common misconception that the wrong glasses can damage our eyes. Glasses are simply a crutch and will neither strengthen nor weaken the physical state of our eyes. Therefore, while it is obviously desirable to have spectacles that will give us optimum vision, we should never fear going blind for lack of proper glasses.

3. Children have a far greater ability to accommodate or focus on near objects than do adults, and they will often develop the habit of holding reading material close to their eyes. This will not harm their eyes and will gradually lessen as they grow older.

4. Children also frequently develop a habit of sitting close to the television, probably because they feel that they are able to see it better at that distance or that they are more a part of what is happening on the screen. Again, there is no evidence that this can actually damage their eyes, and we can hope their habits will change as they grow older.

5. It is a sad truth that many people with failing vision will deprive themselves of much of the joy that they might still be able to obtain from their eyes simply because they are afraid that using their eyes will make their visual problem worse. The fact is that using the eyes will make them neither stronger nor weaker, and we should all take advantage of what sight we have to whatever extent we have need for it.

6. People with low vision may develop visual fatigue more rapidly than those with normal vision. While it is reasonable to rest the eyes periodically in order to avoid excessive fatigue, it is false to say that such rest periods will actually strengthen the eyes.

7. One of the most dangerous misconceptions ever promulgated about the eyes is that children with crossed eyes will likely outgrow this with time. In rare cases, crossed eyes in an infant may be a sign of a tumor in the eye, which could be fatal without early treatment. Much more commonly, failure to correct crossed eyes at an early age will lead to permanent reduction in vision in one eye, due to failure to use that eye or "lazy eye." Furthermore, doctors have a better chance of correcting the crossed eyes if treatment is begun at an early age.

8. Reading problems among children is usually referred to as dyslexia. This is felt by most people to be a learning disorder and is best handled by people with special training in learning disabilities. Before such treatment is started, however, it is important that the child have an eye examination to rule out any actual visual problem.

9. It is a common misconception that a cataract is a film which grows over the front of the eye. In fact, however, it is a gradual clouding of the normal lens which each of us have inside our eye, similar to the lens of a camera.

10. Not all cataracts require surgical removal. There was a time when the surgery was easier to perform when the cataract was far advanced, which is the basis for the current misconception that a cataract must be "ripe" before surgery. With the newer techniques of cataract surgery, the state of the cataract is no longer a critical issue. Today, the indication for a cataract extraction is when it has progressed to the point of causing the

individual significant visual handicap.

11. Once a cataract is completely removed, it will never grow back. It should be noted, however, that some of the newer techniques of cataract surgery involve leaving the posterior portion of the lens in place. In some cases, this portion of the lens, which is referred to as the capsule, may later become cloudy and require further surgical intervention. It is here that the laser may have a role in cataract surgery, since it can be used to make an opening in this cloudy capsule.

12. Many glaucoma screening clinics have limited their services to people over the age of 40 years. As a result, the misconception has developed that people under this age are not susceptible to the disease. The fact is that even babies can be born with a form of glaucoma and it can occur at any age, although it does become more common with each progressive decade.

13. Hard contact lenses will cause a temporary molding of the cornea, or front window of the eye. This molding persists for several hours or days after the contact lens is removed and can, in some cases, actually improve the vision without lenses. Some people have tried to utilize this phenomenon to obtain permanent improvement in vision. There is, however, no evidence that there is any lasting value in this approach.

14. Contact lenses will occasionally slide off the cornea and become lost between the lids and white portion of the eye, or sclera. However, it is simply not anatomically possible for the lens to go behind the eye or into the brain.

15. It is not uncommon for some older people to find that they are able to read without their glasses. It is not surprising that this might lead to the misconception that their eyes are getting stronger. The unfortunate truth, however, is that they are becoming more nearsighted, which is usually a sign of early development of cataracts.

16. It is rarely necessary to have glasses checked on an annual basis. Unless your ophthalmologist indicates that there is a particular reason for having your eyes checked more frequently, every several years is usually sufficient.

17. While sunlight can cause damage to the eyes if one stares directly at the sun, being outdoors on a bright day will not harm the eyes. As with all other glasses, dark glasses are simply a convenience, but will not protect the eyes from physical damage.

18. In the majority of cases, our eyes are constantly being bathed by normal tear production. Only under special circumstances do our eyes require additional eye wash, and it is usually best to do this under the direction of your ophthalmologist.

19. Eye transplantation involves only a portion of the cornea, or front window of the eye. Therefore, it makes no difference what the color of the iris in the donor or recipient eye may be, since this is not involved in the operation.

20. It is a common misconception that headaches may be due to eyestrain. The truth is that this is only rarely the case. Nevertheless, it is reasonable to have your eyes examined as part of a complete evaluation for chronic headaches, especially when the headaches seem to be associated with the use of the eyes.

It is hoped that these twenty points may help to clarify some of the common misconceptions about our eyes. As with all aspects of medicine, a better understanding of the facts about our body is an essential element of a healthy and happy life.

What's It Like To Be Visually Impaired All Your Life?

Patricia K. Hodgson

Sometimes medical science just can't help a patient. Despite marvelous advances in ophthalmology and ophthalmological surgery, some people do lose their vision and some others who are born sightless remain sightless throughout their lives. Three employees of Duke University Medical Center, all of them women, were willing to share with the readers of this *Journal* some information about how they cope with blindness in their work and home lives.

Jane Betts is a wife, mother, grandmother, and secretary. She cooks, cleans, rides a bicycle, types letters and manuscripts, makes and takes innumerable phone calls every working day. Jane Betts is also legally blind.

A person who is legally blind has measurable vision of 20/200 or worse in the better corrected eye, or 20 degrees or less visual field. Mrs. Betts, who has optic atrophy, is able to count fingers being held up two feet away from her, but no farther. What vision she has is peripheral rather than central, so that when she needs to see something she cannot look straight in the middle of it and see it. "A lot of times people come to my office and sort of appear in the door, and I'll look up and say, 'Can I help you?' and they'll stand there and stare. And I'll say again, "May I help you?' And they'll look back over their shoulder as if I was speaking to someone behind them."

Mrs. Betts doesn't look blind. She doesn't carry a white cane or wear sunglasses or use a guide dog. Since she has good travel vision, she walks straight and purposefully. She's a petite and pretty woman who dresses neatly and has recently begun to experiment — quite successfully — with eye makeup. Her life is busy and full and, from all appearances, satisfactory.

During the first few years of her life, Mrs. Betts was unaware that she was any different from the other children in her neighborhood in Winston-Salem. "I was a pretty quiet child. I was not a rambunctious person. I wasn't going to climb trees and run and play ball anyway." Although her parents recognized her problem when she was three or four years old (her father had it, too), she doesn't remember even thinking about it until she was about six. "The kids my age started talking about going to school and I was told that I wouldn't be going to school with them because I couldn't do what they were going to do. I was going to go somewhere different."

Forty or so years ago, Jane Betts entered the Morehead School for the Blind in Raleigh. "I was seven years old and I got to pack up all my clothes and go away to school. I remember my mother acting sort of sad. When I got there I ran over and started playing with the other children. I found going to school there very exciting.

"I remember imagining about going to school: what was I going to learn? Would I print letters that were raised? We did learn our letters, but they were different because they were Braille. We began by feeling little dots, or a board with little nails, and we learned that different combinations of the six dots formed different letters and so on. We learned to read from left to right, but we wrote from right to left using a slate and stylus."

A stylus is a wooden or enamel knob with a blunt steel tip. A slate is actually a guide, usually made of aluminum, which holds the paper firmly while the person writing Braille presses the right combinations of the six dots to make letters and words. Since the dots are pushed into the back of the paper in order to be raised on the front, the person writing Braille writes from right to left; when the paper is complete it is turned over and read from left to right with the fingertips. Blind children are rarely taught using slates and styluses today — they start out very early on Braille writers.

"We learned history and geography. We worked with maps, wonderful maps that covered whole tables and in which each state was independent like in a jigsaw puzzle. The mountains were raised and there was a large dot for the capital and a smaller one for the main city.

"We learned math, but we did it all in our heads. We had a great music program, and that was a golden opportunity. We had a very good physical education program, with a heated pool to swim in in the winter.

"We had the very same curriculum that the public schools had, the very same books, and we moved at the same speed. In fact, I feel that we learned faster because most of the classes were very small, with just nine or ten in a class. It was really just like a fine private school with excellent, qualified teachers."

Many of the graduates of the Morehead School went on to college, and many of them get together annually at their reunion. Some of Mrs. Betts' former classmates are college professors now, one is a stockbroker who also teaches judo, some are medical transcriptionists or secretaries, some others teach in public schools, either blind or normal children, but often they are in special education.

Children at the Morehead School in the 1940's didn't learn to handwrite and they were not taught to read anything other than Braille. Some of them with some vision taught themselves to read and to write later. Jane Betts is one of those. She married shortly after leaving school, gave birth to a daughter, and settled into the roles of a wife and a mother. Debbie, her daughter, learned early that she had to answer when her mother called; since Debbie has somewhat the same visual problem as her mother, her own two children have also had to learn that lesson.

After 13 years, Jane Betts and her family moved to Durham, and she decided to get into the medical secretarial field. "At that time Duke had a special program in the Medical Outpatient Clinic for visually handicapped people. They paid the tuition, furnished all the equipment, and gave us an on-the-job training program. The training program lasted as long as necessary for us to feel competent as medical secretaries. We listened to tapes and transcribed them, and then someone read what we typed and told us what we did wrong. After ten months I felt that I was ready to look for a job, and that's when I became Dr. Gunnells' secretary. That was 18 years ago." Dr. J. Caulie Gunnells is a nephrologist in the Department of Medicine at Duke University Medical Center.

After she finishes typing a letter, Mrs. Betts uses a low vision appliance that looks much like a jeweler's glass to check for typographical errors. She places the glass right on the paper and brings both the glass and the paper up to her eye. The glass magnifies six or eight letters at a time, making them several times their normal size; by moving the paper under the magnifier she is able to read her own typing. Although this appliance is a real boon in the office, she does not use it to read books or newspapers because of the tedium involved. She gets books on tape from the North Carolina Library for the Blind. Periodically she is sent a new listing of books on tape and she chooses what she would like to read. The Library provided her with a tape recorder with earphones and they send her both the tapes and a return packet for mailing them back, postage free. "Right now I'm reading *The Far Pavilion* about India. The woman reading it on the tape is very good — she just seems to be the person she's reading the part of. The same thing was true for *The Other Side of Midnight*, which I read recently."

When asked about her limitations, Mrs. Betts said, "I can't drive a car, and there is no compensation for that. I can ride a bicycle, though. I pick the time of day when the light is beginning to fade so it's better for me. I never ride on a busy street, but I do in my neighborhood. I'm cautious.

"I don't read printed books or handwriting. I count on other people to read letters to me.

"My husband does the food shopping and I do other things at home while he's there. I tell him I don't know anything about new products on the market because he only gets what's on the list.

"In daily activities, I don't have any limitations, like in cooking, cleaning, and working. I can see when something has come to a boil or is about to burn. Generally, I don't give a thought to being handicapped. Nor, I think, does Dr. Gunnells on a day-to-day basis." The Rolodex file Mrs. Betts keeps up in her office contains names, addresses, and telephone numbers she and Dr. Gunnells use often. Like most busy people, Dr. Gunnells is quite dependent on his secretary; when it comes to using the Rolodex he's more dependent than most: Mrs. Betts wrote it in Braille.

When asked to summarize the major problems of the blind, Mrs. Betts said, "I think that if any blind person had to say what was a biggest problem in his or her life, mobility would be the answer. In addition to mobility another problem is shopping, because of reading prices, seeing colors and sizes, and so forth. And it's worse since everything is so self-service."

Becky Buckner is almost totally blind. Like her brother and sister (but neither parent), she has retinitis pigmentosa, which means that she was sighted at birth and lost her vision slowly, first peripherally and then more centrally, until now she has only light perception. She walks the many hallways of Duke Hospital South as part of her job as medical secretary in the Department of Psychiatry with the help of a white cane, which she taps from left to right in front of her. In a hospital as large as Duke, the obstacles in her path can range from empty laundry carts to wet floor signs to wet floors to wheelchairs to walls and doors that weren't there yesterday. The cane is indispensable.

Mrs. Buckner was able to go through public schools, although she needed a reader her last two years of high school. "Even then I had fairly good travel vision, and I didn't use a cane until I was in my mid-twenties."

In her teens, Mrs. Buckner drove her father's car up and down the driveway, fantasized about being licensed to drive, and was even required to take driver's education classes in order to graduate from high school. She actually went out driving with an instructor and a couple of other students, having told no one that she had seeing problems, and drove just fine until she had to parallel park. Then, "I didn't do too well. I ran all over the curb. It was at that point that the instructor decided we'd all have eye tests."

The key to traveling with a cane is knowing where you are. "As long as you're in familiar territory, the use of the cane is quite adequate. You have these key places to guide you, like juts in the walls. But once you get into unfamiliar territory, you go a lot slower and with a lot more caution. It's a constant challenge around Duke with all the renovation going on."

"I don't do a whole lot of traveling outside by myself. I can get to where my husband picks me up, and I can get down to the bus stop, because I used to take the bus to work."

One feature that we all consider an improvement for most handicapped people has created a problem for Becky Buckner and other cane-dependent blind persons, and that is the graded curb for wheelchairs. While these ramps are great for the wheelchair-bound person, they have completely eliminated the abrupt curb that many blind persons used as a guide to where they were. "Now," says Mrs. Buckner, "a blind person can't determine when they've gotten to the end of the block."

Mrs. Buckner has a twelve-year-old son, Stephen, who has been followed very closely by his ophthalmologist all his life, and shows no signs of his mother's disease. At home, she uses her husband's and her son's eyes much of the time. "I have things situated so that I know where everything is, and it's a cardinal rule that nobody moves anything without putting it back in the exact place." Her husband does much of the grocery shopping, although Mrs. Buckner usually goes with him, and he tells her precisely where he has put all the canned goods at home so that she can easily find them. She confesses that she just as often asks her son to hand her what she needs. "If I was really independent, and lived by myself, I could make labels to go around the cans, and there are all kinds of super-duper aids I could use. But I don't really need them for the life I lead."

After finishing high school, Mrs. Buckner went to the Rehabilitation Center in Butner for a six month program. Although she could still see fairly well at the time, she learned Braille, cooking and, in particular, how to use the cane. With those necessary lessons absorbed, she came to Duke to the training program for medical transcriptionists in 1963. In January 1964 she took a position with Duke's Department of Psychiatry, and is now a medical secretary in that Department.

Mrs. Buckner uses several aids to help her in both her working and non-working life. She has a talking calculator which makes it much simpler to balance accounts. She also has an Optacon attached to the typewriter she uses at work. Part of this device looks like a microscope and produces a photographic image of each typed letter, which it transmits to the Optacon machine located to the side of the typewriter. "There's a little place in the Optacon machine where you place one finger, and through vibration of minute reeds you can feel the image of each letter."

For the life she leads at work and at home, Mrs. Buckner feels that the cane and her family are the two best visual aids she could have.

Donna Cooper is totally blind and has been since the age of five. Until a little over one year ago, she got from where she was to where she wanted to be with the use of a white cane, just like Becky Buckner. She spent her college years at Carolina in Chapel Hill using the cane, although today she says, "Now that I think back on it, I don't know how in the world I did it." Now, though, she has Felo (rhymes with yellow), a sleek, friendly, hard-working black Labrador, her guide dog.

Donna Cooper met Felo at Guiding Eyes for the Blind in Yorktown Heights, New York; spent just three weeks in school there learning how to make good use of Felo; and then left with him for home in Durham. Ms. Cooper works as a medical transcriptionist in the Chief Resident's office in Duke Hospital and Felo works there, too. She listens to tapes and transcribes what she hears using a typewriter; Felo lies under her desk, waiting for her to need him to guide her on one of the several errands she often makes, either within Duke North, where their office is, or in Duke South, the old part of Duke University Medical Center, which is separate from the newer part.

The program at Guiding Eyes interested Ms. Cooper for several reasons. She had a friend with a guide dog from there, and she was impressed by that dog. She also liked dogs, although she had never had one. The *real* reason she decided to try a dog was that she "just wanted to try something different with the idea that if I didn't like having a dog I could always just send him back and go back to the cane. I had no idea that a dog would make much of a difference, but it does."

The first day at Guiding Eyes the fifteen students in the class walked around with a trainer — not a dog — on a harness. "They were actually trying to match up the people with a dog according to how fast they walked, what their coordination was like, and so on." On the second day students and dogs met and for the next few days they were closely watched by the three trainers to be certain they had good matches. After that, it was a matter of learning the verbal commands between student and dog, and going out on walks of an hour or so several times daily with another student-dog pair and a trainer. "We learned that if your dog can get you through the Bronx, New York, he can get you through anything."

The harness that a working guide dog wears is essential for the safety of his master or mistress. It took Ms. Cooper about five months to be able to really follow Felo. "At the school we learned the fundamentals of following the dog, but it's a lot harder than you'd think. It's not just a matter of hanging on and him going. It's really hard when he's weaving through a crowd of people or he's going through an area where there are lots of obstacles and there's not much space. It's tricky."

Although it might appear that the blind person uses pressure on the harness to guide the dog in the direction she wants to go, in fact the dog uses pressure on the harness to guide the blind person in the right direction. "That's why most dogs that you see tend to walk very fast — Felo tends to trot; you need to have a certain amount of tension in the harness all the time."

Felo is a pet and companion as

well as a partner, although there are times when Ms. Cooper tires of being with him 24 hours a day. When that happens she just goes out with a friend for a few hours and returns ready to be with him constantly again. On the other hand, "there was one day that Felo had to go to the vet and I was here all day without him. It was terrible." She finds him more a hindrance than a help on shopping trips, however, so he regularly stays home from those. The problem with shopping trips is the continual stopping, which Felo associates with having done something wrong. When he does make an error in leading Ms. Cooper, she must make him stop and correct his error immediately. He reacts to such corrections by drooping his head and putting his tail between his legs, the same symptoms he was showing on shopping trips. Now he stays home.

In order to keep Felo on target when he is working, Ms. Cooper has trained him to associate the harness with work. "When he's in his harness I don't like him to play or people to pet him because it distracts him. There are things that he's not allowed to do in his harness: he's not suppose to eat or drink, for instance. When Felo's not in his harness, I really don't care what he does."

The Guiding Eyes for the Blind asks its students for $150 for the dog and the training program, but they try not to turn anyone away for lack of the $150. To make their program more economical, and in order to have a steady supply of good dogs, they have a large kennel with about 200 Golden Retrievers, German Shepherds, Bouviers, and Labrador Retrievers. "What they are trying to do is produce a guide dog strain. They're looking for a dog that is the right size and has a good temperament and is intelligent. Through breeding two dogs that have the right characteristics they can produce more dogs like that. My dog was in a litter of five puppies, and four of them made it to the class. There was a time when they were lucky if one of five was good enough to make it."

There are many tools to make the life of an unsighted person better and fuller. Donna Cooper has Felo and Felo gives her mobility. Like Becky Buckner, she has an Optacon that she uses to check for typos. In the future, though, there are talking computers and word processors that will *read* what has been typed. For Jane Betts, Becky Buckner, and Donna Cooper, that kind of machine will make life at work a whole new world.

GUIDE DOG SCHOOLS

New York
Guiding Eyes for the Blind, Inc.
611 Granite Springs Road
Yorktown Heights 10598

Guide Dog Foundation for the Blind, Inc.
109-19 72nd Avenue
Forest Hills 11375

New Jersey
The Seeing Eye, Inc.
P.O. Box 375
Morristown 07960

Ohio
Pilot Dogs, Inc.
625 West Town Street
Columbus 43215

Michigan
Leader Dogs for the Blind
1039 Rochester Road
Rochester 48063

California
Guide Dogs for the Blind, Inc.
P.O. Box 1200
San Rafael 94902

International Guiding Eyes, Inc.
5431 Denny Avenue
North Hollywood 91603

Hawaii
Eye of the Pacific Guide Dogs, Inc.
3008 Kalei Road
Honolulu 96814

Specialists in Low Vision in North Carolina

Low Vision Clinic
University of North Carolina
Chapel Hill
919/966-2231

Charles W. Tillett, Jr., M.D.
2200 E. 7th Street
Charlotte
704/372-3990

William A. Shearin, M.D.
2800 Blue Ridge Road
Raleigh
919/781-7373

Lions Low Vision Aid Clinic
Asheville
704/252-5706

Low Vision Clinic
Duke University Eye Center
Durham
919/684-3343

Reading Material for the Blind

The North Carolina Library for the Blind and Physically Handicapped is a special public library service operated by the North Carolina State Library in cooperation with the U.S. Library of Congress. The library circulates books and magazines specially made for people who cannot use standard reading materials because of a visual or other physical handicap. The library is located in Raleigh but sends books by mail to readers throughout the state.

Who Is Eligible?

Anyone who cannot use regular printed materials because of a visual or other physical handicap is eligible. This includes anyone whose visual impairment, either permanent or temporary, cannot be corrected with eyeglasses. Persons with a physical disability preventing them from turning pages or holding a book are also included. In addition, certain learning disabilities may qualify. Nursing homes and other institutions serving people with these disabilities are also eligible.

What Is Available?

The same book and magazine titles found in any other public library are available. However, instead of being printed in regular-sized print, they are recorded on long-playing records and cassette tapes, and produced in grade 2 braille or large type. Readers are also provided with special record and tape players.

There are books and magazines for all ages and all reading interests; catalogs listing available titles are sent to each reader.

What Does It Cost?

The patron pays nothing for this service. There are no postal charges for sending books and machines through the mail; and machines are repaired without charge. In addition, North Carolina residents may call the library's toll-free telephone number whenever they need books or have a problem.

How To Apply

The library will send you an application form for your convenience. This form will give detailed information on who is eligible, what is available, and how to complete the application. If your application is approved, you will begin to receive materials from the library within a week. Should there be a problem with your application, the library will get in touch with you. If you wish to write the library, the address is: North Carolina Library for the Blind and Physically Handicapped, 1811 North Boulevard, Raleigh, North Carolina 27635.

If you wish to telephone us, the numbers are: (919) 733-4376 (Raleigh area residents), 1-800-662-7726 (our toll free number, good from any point in North Carolina).

The library staff will be happy to give you more information or answer any questions you may have about the service.

How You Can Help

Volunteers are used in many aspects of this service, for example in the recording and brailling of books and magazines. We welcome any inquiries from individuals or groups who wish to learn more about this part of our program.

The following information on literature available for the visually impaired is extracted from an article in the March 1983 issue of *Carolina Country*. It is reprinted here with the permission of the Agricultural Extension Service.

Large print literature is available for North Carolina residents suffering from a loss of vision.

Those with friends or relatives who cannot see as well as they once could may want to explore the following resources, say extension human development specialists at North Carolina State University.

The American Bible Society is a non-profit, interdenominational organization which sells large print bibles. Write to the society at P.O. Box 5656, Grand Central Station, New York, N.Y. 10017 for a catalogue to select the Bible version and size print. The entire Bible, the New Testament, Psalms, Isaiah, Acts and Proverbs are all available in large print.

The *New York Times* is also sold in large-print edition. There is no advertising in the issue, but all the news is there. For subscription rates, write to *The New York Times*, Large Type Weekly, P.O. Box 2570, Boulder, Colo. 80302.

Reader's Digest, also containing no advertising, can be ordered in large print. It is also on loan from the N.C. State Library. For subscription information, write to *Reader's Digest* Large-Type Edition, Box 241, Mt. Morris, Ill. 61054.

Upper Room, an interdenominational international daily devotional guide, is published bi-monthly in large print. To subscribe, write to *The Upper Room*, 1908 Grand Avenue, Nashville, Tenn. 37203, for more information.

Guideposts is another devotional for every day in the year, available in large print. For subscription information, write to *Guidepost*, Carmel, N.Y. 10512. This is also available at some bookstores.

Mature Living, a Christian magazine for senior adults, which is large print in its entirety, is published by The Sunday School Board of Southern Baptist Convention, 127 Ninth Avenue North, Nashville, Tenn. 37234. Subscription information for the large print edition is available from this address.

A recorded "talking machine" version of *Newsweek* is produced weekly by the American Printing House for the Blind, Inc., P.O. Box 6435, Louisville, Ky. 40206. The recorded magazine is provided free to eligible readers through gifts to the non-profit corporation. A contribution of $28.50 covers the cost of a one-year subscription.

Recorded excerpts from various national magazines are offered in eight-hour monthly collections by *Choice Magazine Listening*. For more information, write to CML, 85 Channel Drive, Port Washington, N.Y. 11050.

20/20 = what?

Have you ever wondered just what the doctor meant when he/she told you your vision was 20/20, or perhaps 20/40? I did, too, so I asked a doctor; in fact, I asked two. They weren't ophthalmologists and they didn't know. So I asked a secretary in Ophthalmology, who didn't know, but she asked a nurse in Ophthalmology, and she did.

I hoped that 20/20 meant that the person being tested could read the line of letters on the eye chart that was 20 millimeters high from 20 feet, and that a person with 20/40 vision couldn't read *that* line from 20 feet, but *could* read the letters 40 mm high. Makes wonderful sense, but it's wrong.

Many long years ago someone decided that the line of letters on the eye chart that most people with "normal" vision could read from 20 feet would be the 20/20 line. If your vision is 20/40 without glases, you can read the line marked 20/40 from 20 feet but the normal person can read that line from 40 feet. According to law, a person can be designated partially sighted if his vision is 20/70 or worse with glasses. A person is legally blind if his vision is 20/200 or worse with glasses.

See?

RADIO READING SERVICE

Radio Reading Service operates in three areas of North Carolina at this time. Listed below is the contact persons for each area along with their addresses and telephone numbers.

Raleigh/Wake County area

Mr. Daniel Bartley
3621 Brentwood Road
Raleigh, N.C. 27604
919/872-8950

Winston-Salem area

Mr. Dan Lindsey
2611 Greencrest Drive
Winston-Salem, N.C. 27106
919/784-2673

Charlotte/Mecklenburg County

Mr. Aaron Newlander
Central Piedmont Community College
P.O. Box 35009
Charlotte, N.C. 28235
704/373-6789

Services for the Blind in North Carolina

Patricia K. Hodgson

The Division of Services for the Blind, a part of the North Carolina Department of Human Resources, administers four different programs from its headquarters on the campus of the Morehead School for the Blind in Raleigh. Three of the programs are for the blind and the visually impaired while the fourth is preventive.

Citizens with questions about any of the services for the blind mentioned in this article may call the Department of Human Resources Information and Referral Service, toll-free, by dialing 1-800-662-7030.

The Vocational Rehabilitation Program accepts people who meet the federal definition of severely visually handicapped, either from birth or at some later time, and helps them to cope in a seeing world. Much of the work in this program is done in conjunction with various North Carolina Lion's Clubs. Blind persons are first seen in one of seven field locations across the state for eye examinations, if needed, and a rehabilitation evaluation, which is based on both the medical evaluation and on interview. The field staff refers appropriate people to the evaluation unit, which is located at the Morehead School. Here blind people as young as 14-16 years spend four to six weeks of intensive evaluation by consulting psychiatrists, ophthalmologists, psychologists, and others. Like most of the Division's services, this one is entirely paid for by state and federal money.

After the six week evaluation, blind clients may be sent to a three month long program at the Rehabilitation Center for the Blind in Butner. The watchwords of the Butner program are job development and job placement. Referrals for the Center come from social workers, private doctors, and the evaluation unit in Raleigh. There is a 44 person capacity at the Center. Many of its participants are newly blinded and the Center helps them become oriented to blind aids in a teaching environment. The ultimate aim, however, is employment.

The second program of the Division is an Independent Living effort that takes place in the blind person's home. Using a staff of 57 social workers, who work out of county departments of social services, the Independent Living program helps determine who is eligible for state aid for the blind — these are usually the elderly blind in nursing and rest homes who need financial assistance — and also helps younger blind persons in their own homes. Beginning last year, social workers were given some skills in training the blind to arrange their homes, to become mobile in their neighborhoods, to sew, to read and write Braille. The net effect of these new skills is to stretch the Division's manpower while increasing the responsibilities of the social workers. On average, these social workers have worked 18-19 years for the Division of Services for the Blind. The Division also employs eight highly trained specialists in mobility and orientation who teach the blind how to broaden their horizons, in particular how to travel beyond their immediate neighborhoods. The Independent Living Program receives support from federal, state, and county sources.

The third program of the Services for the Blind is the Business Enterprise Program. One part of this program assists the homebound blind person become somewhat self-employed through crafts and handiwork, while a second part provides loans and support for blind small businessmen. The third component oversees the operation of vending stands run by the blind in office buildings in various cities.

The Medical Eye Care Program is the fourth part of the Services for the Blind and this one is aimed at preventing blindness. It is a state-funded program to screen, diagnose, and treat people whose income meets certain limits set by the legislature. Patients make a co-payment for a visual examination and, if they are needed, for eyeglasses, and the Division pays the balance of the costs. This part of the program is run entirely through the offices of private eye doctors, who will refer patients who need other services of the Division either to the Vocational Rehabilitation Program or to the Independent Living Program. Another part of the Medical Eye Care Program offers visual screening tests to anyone, regardless of income, through health fairs, county health departments, schools, and industry. Visual acuity and glaucoma tests were given to 40,000 North Carolinians in 1982 through this program. In the fifty or so counties without ophthalmologists in North Carolina, the program offers comprehensive eye care services through clinics set up with the help of schools or health departments.

Catalog for the Blind

The American Foundation for the Blind publishes a catalog of consumer products for people who have vision problems. Products listed and described in the 1982-1983 catalog included watches and clocks with tactual dials, talking clocks, canes and accessories, games like Monopoly and Scrabble in Braille and Connect Four and Backgammon with tactual pieces, measuring tapes with reinforced holes every ½ inch, and Braille labelers. The catalog is available from the American Foundation for the Blind, 15 West 16th Street, New York, NY 10011. It is free and comes in both print and Braille.

Orthoptics

Marguerite Sullivan

The word orthoptics means straight eyes. Orthoptics is the clinical science of ocular motility and related disorders of the eye. The field of orthoptics was organized approximately 40 years ago as an auxiliary to Ophthalmology.

Orthoptists receive their training at one of the 27 accredited institutions in the United States following two, and preferably four, years of college. There is no accredited institution for orthoptists in North Carolina, although there is one each in South Carolina, Georgia, and Florida. After completing the two year course, orthoptists are given a certification examination by the American Orthoptic Council, which comprises both ophthalmologists and orthoptists. Certified orthoptists are employed by either individual ophthalmologists or institutions with a concentration in ophthalmology to assist in evaluating and treating ocular motility defects. There are fewer than seven certified orthoptists in North Carolina.

The orthoptist performs certain diagnostic tests to determine the motor and sensory status of the two eyes. Where there is strabismus (squint), the orthoptist determines whether the deviation is latent or manifest and by using prisms measures the amount of deviation. The orthoptist also evaluates the ocular movements of each eye and both eyes together providing the additional information for determining the cause and thus the course of treatment for the ocular motility defect.

Sensory testing including the determination of visual acuity of each eye comprises the other portion of the diagnostic routine. A defect in ocular motility prevents the normal sensory cooperation of the two eyes, which is called fusion. The patient may adapt to a deviation of an eye in several ways: a mild adaptation would be the suppression of the deviated eye in intermittent strabismus; a more profound adaptation is amblyopia, which is reduced vision in an otherwise normal eye that has been habitually suppressed as a result of a unilateral strabismus or anisometropia. It is the job of the orthoptist to evaluate the potential for normal binocular vision in the patient with strabismus and, if the potential is present, to determine to what degree the sensory anomalies prevent it.

Treatment

The treatment of amblyopia is one of the most important tasks that the orthoptist performs. Amblyopia can be treated successfully if tackled early enough and aggressively enough. The most successful method of treatment overall is the adhesive eye patch applied to the face over the better seeing eye. It is initiated after six months of age and in some cases as late as nine or 10 years of age. Regardless of the age that patching is first instituted the vision of the formerly amblyopic eye must be maintained with part-time or partial occlusion until about age nine years.

Other forms of treatment which the orthoptist may use are spectacle lenses or miotics as prescribed by the ophthalmologist. Prisms worn on or incorporated in lenses may be prescribed diagnostically, as well as theoretically to stimulate fusion.

Orthoptic exercises are prescribed for selected patients. In patients who are to undergo strabismus surgery, anti-suppression exercises may be beneficial. In other patients where fusional convergence amplitudes are low, rendering a patient symptomatic and/or unable to control a small intermittent deviation, orthoptic exercises can be helpful.

Although children make up the majority of the typical orthoptist's patients, they by no means comprise the total patient population. Adults with longstanding untreated strabismus frequently are seen, as are others with recent onset ocular motility problems frequently associated with other eye or systemic conditions.

From McPherson Hospital, 1110 W. Main Street, Durham, NC 27701.

Lasers in the Office

P. W. Heald, M.D., C. S. Burton, M.D., J. L. Callaway, M.D.

In the past few years every area of our lives has had its share of the "high tech" boom. Kitchens have computerized microwaves, offices have word processors, and the modern lingo is replete with "chips" and "bytes." The medical technology boom has revolutionized diagnostic and therapeutic approaches to a wide range of diseases. In the treatment of skin problems the laser beam is one of the newest and most exciting developments.

The word laser conjures up images of Star Trek weapons and vaporizing starships. While these uses have yet to be explored, this stigma of uncontrolled destruction is undeserved. Indeed, the advantages of using a laser are due to its selectivity and ease of control. The word laser is an acronym for **l**ight **a**mplification by **s**timulated **e**mission of **r**adiation. The key words are light amplification. But amplification of regular light is more likely to produce sunburn than anything else. Amplification of a single wavelength of light in a laser results in specific and predictable effects with infinite control. Regular light is composed of many colors (which one can separate with a prism) much like a chord of music is composed of many notes. The bad effects of sunlight such as sunburn and skin cancers are due to specific parts of sunlight (or, in keeping with the music analogy, a few bad notes). One advantage of a laser is that it has only one color of light (a single note) and can produce the desired effect while also avoiding the bad effects. Hence when a single color is amplified you do not get the same result as when regular light is amplified.

Another advantage of a laser beam can be seen when one shines it against a wall in comparision with a flashlight. The flashlight will illuminate the entire wall, whereas the laser travels in a straight beam that is no bigger or smaller than when it leaves the machine. Thus one can also control this type of beam more easily than one can a conventional light source.

The best example of laser selectivity and control is seen with the argon laser. Argon is a material that produces a red light. The red light will destroy only red objects. When one moves the beam across an apple the green skin parts are unaffected but the red skin is vaporized in the beam's path. This selectivity is extremely useful in treating abnormal collections of blood vessels under the skin. The red blood-containing vessels are destroyed without damage to the surrounding tissue. The overlying skin is flesh colored, brown, or yellow and thus not disrupted. Since the beam penetrates less than one-half inch, there is no risk of damaging deeper blood vessels.

Another laser that is finding many uses is the carbon dioxide laser. Just as the argon laser has blood for a target, the carbon dioxide laser attacks water. Since every part of our body has water in it, this laser has the ability to cut through anything with a beam finer than a scalpel. It can also vaporize any abnormal growths such as warts. An advantage of this laser over conventional treatments is that it seals off blood vessels and nerves as it goes along so that there is less bleeding, swelling, and pain. There also is less pressure or blunt injury to tissue which may occur with a scalpel pushing and probing along.

Newer lasers are being developed along with the nationwide "high tech" boom. There is an experimental brown light laser that can vaporize brown moles and mole cancers. Perhaps the most promising is the development of a laser which can generate any type of light desired — red, blue, brown, etc. This electron beam laser is currently the size of a small house and prohibitively expensive. That is, however, what people were saying about computers a decade ago.

From the Division of Dermatology, Duke University Medical Center, Box 31002, Durham NC 27710.

ABOUT BOOKS

Miscellanea

Matthew N. Hodgson

In 1973, Norman Maclean retired from the University of Chicago where, for many years, he had been the William Rainey Harper Professor of English. A couple of years later, at age 70, he published with the University of Chicago Press a slender volume entitled *A River Runs Through It and Other Stories*. It was the first work of fiction ever to bear the imprint of that distinguished press (although its director, Morris Philipson, is himself a fine novelist) and, so far as I know, it was the author's first departure from formal literary scholarship.

A River Runs Through It proved to be a rare publisher's dream — a book that has now sold over 40,000 copies, mostly through word of mouth. It is impossible to describe Professor Maclean's remarkable volume in brief compass, but it is about flyfishing; the grandeur of Montana's great streams and rivers; and the affection, respect, and occasional heartbreak experienced by the family of a Presbyterian minister fifty years ago.

Serious trout fishermen will love this book, and so will any literate person who enjoys stories that are both tough and touching, reflect honestly the human experience, and are written in a style that is vigorous, laconic, reflective, and altogether accessible. Professor Maclean is a "natural." I will go further: *A River Runs Through It*, while reminiscent of some of Ernest Hemingway's stories, is written with a kind of spontaneity and force that make Hemingway's work seem mannered and superficial. The book is available in a clothbound edition at $12.50; this autumn Chicago will publish a deluxe edition, illustrated with striking color photographs of Montana's waters, priced at $25.00. In either format, it is the best buy in recent fiction that I know of.

Another, quite different book also published by the University of Chicago Press is the *Chicago Manual of Style*. This is the thirteenth edition of this guide and reference work, which should be in the library of anyone concerned with the proper preparation of a term paper, an article for a medical journal, a collection of favored recipes, a serious genealogical study or, indeed, any manuscript that an author hopes to put in a form acceptable for publication.

Every conceivable question that an author might have is identified and answered in this volume, and it even includes an enlightening section on various technologies of book composition, printing, and binding. The usefulness and comprehensiveness of the new *Chicago Manual* easily justifies its selling price of $30.00; indeed, as an editor and publisher, I can attest that most aspiring authors, unfamiliar with the exact requirements of manuscript preparation, could save many times the cost of this authoritative volume by following its clear and detail advice.

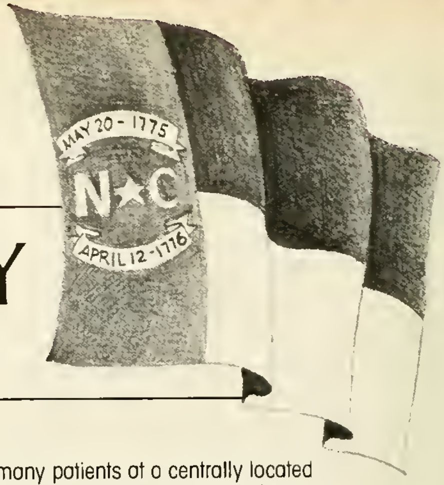
Tony Hillerman is a former newspaperman who now teaches journalism at the University of New Mexico. One of his avocations is the study of social anthropology of the Indians of the American Southwest. During the past decade or so, he has written a number of thrillers of which the protagonist is Sergeant Jim Chee of the Navajo Tribal Police. Originally published in cloth covers by Harper & Row, Hillerman's books are now appearing as paperbacks under the Avon imprint. Three of the best are *People of Darkness*, *Dancehall of the Dead*, and *The Blessing Way* — all priced at $2.25.

I know of no easier way to learn something of the customs and beliefs of the natives of the American Southwest and, at the same time, to enjoy well-plotted, fast-paced mysteries than acquiring and reading Hillerman's excellent novels of suspense and detection. Curiously, only a few bookstores in North Carolina now stock them, but most will be glad to special order them for you.

From the University of North Carolina Press, Brooks Hall, Chapel Hill, NC 27514.

Roche salutes
the history of North Carolina medicine

THE 18-HOUR-A-DAY DOCTOR



Dr. Gaine Cannon

A modern-day version of the country doctor on horseback, Dr. Gaine Cannon covered his scattered practice around the Blue Ridge Mountain country near Balsam Grove, North Carolina, in a four-wheel-drive Jeep wagon.[1]

On an average working day, Dr. Cannon rose at sunup to see patients at his converted-farmhouse clinic before setting out to make his usual 15 to 20 house calls around the countryside. Generally, after treating his primary patient, he saw each member of the family, as well—his personal effort at preventive medicine.

Multiple services

With the nearest hospital some 60 miles away and no pharmacy closer than an hour-and-a-half drive, Dr. Cannon filled his own prescriptions, delivered babies and treated many patients at a centrally located general store with the most modern techniques and medications. After a day on the road—usually within a 50-mile radius—Dr. Cannon's office hours would begin at 5:30 p.m. and stretch on until the last patient was attended to. His record-keeping sessions routinely filled the hour before midnight—rounding off Dr. Cannon's 18-hour day.

At all hours

But emergencies often interrupted his sleep. Dr. Cannon claimed his real office hours were 24 hours a day, and his patients revered him for it.

Dr. Cannon died in 1966 at the age of 68. He will be long remembered—most especially by the more than 5000 North Carolinians he helped bring into the world, some of them at the side of a rutted country road.

Reference: 1. Doctor in the backwoods, in Lee RV, Eimerl S *et al*: *The Physician*. New York, Life Science Library, Time Inc., 1967, pp 38-50

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ROCHE®

When the history reveals anxious depression...

For the estimated 70 percent of nonpsychotic depressed patients who are also anxious,[1] Limbitrol provides both amitriptyline, specific for symptoms of depression, and the effects of Librium® (chlordiazepoxide HCl), the tested and dependable anxiolytic. Limbitrol is, therefore, a better choice for these patients than dual agents that contain a phenothiazine, a class of antipsychotic drugs used infrequently in nonpsychotic patients.[1]

62% of Overall Improvement...Within the First Week

Limbitrol also has a rapid onset of action which may lead to greater patient compliance. In a multicenter study, patients taking Limbitrol experienced 62% of their overall improvement within the first week of therapy.[2]

In another multicenter study,[3] the following symptoms associated with anxious depression were significantly reduced during the first two weeks of therapy:

☐ Headache—79%
☐ Early insomnia—91%
  Middle insomnia—87%
  Late insomnia—89%
☐ Gastrointestinal upset—73%

In two multicenter studies, only 1.9% of Limbitrol patients experienced cardiovascular side effects.[3]

Patients should be cautioned about the combined effects with alcohol or other CNS depressants and about activities requiring complete mental alertness such as operating machinery or driving a car.

References: 1. Rickels K: Drug treatment of anxiety, in *Psychopharmacology in the Practice of Medicine*, edited by Jarvik ME, New York, Appleton-Century-Crofts, 1977, p 316. **2.** Feighner JP *et al: Psychopharmacology 61:* 217-229, Mar 1979. **3.** Data on file, Hoffmann-La Roche Inc., Nutley, NJ.

In moderate depression and anxiety

Limbitrol® Ⓒ IV

Tablets 5-12.5 each containing 5 mg chlordiazepoxide and 12.5 mg amitriptyline (as the hydrochloride salt)
Tablets 10-25 each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt)

Please see summary of product information on following page.

LIMBITROL® TABLETS Ⓥ **Tranquilizer—Antidepressant**
Before prescribing, please consult complete product information, a summary of which follows:
Indications: Relief of moderate to severe depression associated with moderate to severe anxiety
Contraindications: Known hypersensitivity to benzodiazepines or tricyclic antidepressants. Do not use with monoamine oxidase (MAO) inhibitors or within 14 days following discontinuation of MAO inhibitors since hyperpyretic crises, severe convulsions and deaths have occurred with concomitant use; then initiate cautiously, gradually increasing dosage until optimal response is achieved. Contraindicated during acute recovery phase following myocardial infarction
Warnings: Use with great care in patients with history of urinary retention or angle-closure glaucoma. Severe constipation may occur in patients taking tricyclic antidepressants and anticholinergic-type drugs. Closely supervise cardiovascular patients (Arrhythmias, sinus tachycardia and prolongation of conduction time reported with use of tricyclic antidepressants, especially high doses. Myocardial infarction and stroke reported with use of this class of drugs.) Caution patients about possible combined effects with alcohol and other CNS depressants and against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving)

> *Usage in Pregnancy:* **Use of minor tranquilizers during the first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Since physical and psychological dependence to chlordiazepoxide have been reported rarely, use caution in administering Limbitrol to addiction-prone individuals or those who might increase dosage; withdrawal symptoms following discontinuation of either component alone have been reported (nausea, headache and malaise for amitriptyline; symptoms [including convulsions] similar to those of barbiturate withdrawal for chlordiazepoxide)
Precautions: Use with caution in patients with a history of seizures, in hyperthyroid patients or those on thyroid medication, and in patients with impaired renal or hepatic function. Because of the possibility of suicide in depressed patients, do not permit easy access to large quantities in these patients. Periodic liver function tests and blood counts are recommended during prolonged treatment. Amitriptyline component may block action of guanethidine or similar antihypertensives. Concomitant use with other psychotropic drugs has not been evaluated; sedative effects may be additive. Discontinue several days before surgery. Limit concomitant administration of ECT to essential treatment. See Warnings for precautions about pregnancy. Limbitrol should not be taken during the nursing period. Not recommended in children under 12. In the elderly and debilitated, limit to smallest effective dosage to preclude ataxia, oversedation, confusion or anticholinergic effects
Adverse Reactions: Most frequently reported are those associated with either component alone: drowsiness, dry mouth, constipation, blurred vision, dizziness and bloating. Less frequently occurring reactions include vivid dreams, impotence, tremor, confusion and nasal congestion. Many depressive symptoms including anorexia, fatigue, weakness, restlessness and lethargy have been reported as side effects of both Limbitrol and amitriptyline. Granulocytopenia, jaundice and hepatic dysfunction have been observed rarely
The following list includes adverse reactions not reported with Limbitrol but requiring consideration because they have been reported with one or both components or closely related drugs
Cardiovascular: Hypotension, hypertension, tachycardia, palpitations, myocardial infarction, arrhythmias, heart block, stroke
Psychiatric: Euphoria, apprehension, poor concentration, delusions, hallucinations, hypomania and increased or decreased libido
Neurologic: Incoordination, ataxia, numbness, tingling and paresthesias of the extremities, extrapyramidal symptoms, syncope, changes in EEG patterns.
Anticholinergic: Disturbance of accommodation, paralytic ileus, urinary retention, dilatation of urinary tract
Allergic: Skin rash, urticaria, photosensitization, edema of face and tongue, pruritus
Hematologic: Bone marrow depression including agranulocytosis, eosinophilia, purpura, thrombocytopenia
Gastrointestinal: Nausea, epigastric distress, vomiting, anorexia, stomatitis, peculiar taste, diarrhea, black tongue
Endocrine: Testicular swelling and gynecomastia in the male, breast enlargement, galactorrhea and minor menstrual irregularities in the female and elevation and lowering of blood sugar levels
Other: Headache, weight gain or loss, increased perspiration, urinary frequency, mydriasis, jaundice, alopecia, parotid swelling
Overdosage: Immediately hospitalize patient suspected of having taken an overdose. Treatment is symptomatic and supportive. I.V. administration of 1 to 3 mg physostigmine salicylate has been reported to reverse the symptoms of amitriptyline poisoning. See complete product information for manifestation and treatment.
Dosage: Individualize according to symptom severity and patient response. Reduce to smallest effective dosage when satisfactory response is obtained. Larger portion of daily dose may be taken at bedtime. Single *h.s.* dose may suffice for some patients. Lower dosages are recommended for the elderly
Limbitrol 10-25, initial dosage of three to four tablets daily in divided doses, increased up to six tablets or decreased to two tablets daily as required. Limbitrol 5-12.5, initial dosage of three to four tablets daily in divided doses, for patients who do not tolerate higher doses
How Supplied: White, film-coated tablets, each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt) and blue, film-coated tablets, each containing 5 mg chlordiazepoxide and 12.5 mg amitriptyline (as the hydrochloride salt)—bottles of 100 and 500; Tel-E-Dose® packages of 100; Prescription Paks of 50

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NEWS NOTES: NCMS ANNUAL MEETING

Medical Manpower: The Views of E. Harvey Estes and Members of the North Carolina Medical Society

Pinehurst, May 1983

Dr. Ernest Spangler: From your experience and observations, what are the determining factors that influence medical schools in the size of the class? What determines the number of interns and residents?

Dr. Estes: Let's face it: medical schools get paid tuition by each student. Tuition is becoming an increasingly large part of the medical schools' revenue. The reason that private medical schools are reluctant to cut back is that it means less income — a lot less income.

State medical schools in general are supported in their work by state legislators who generally base their allotment on the number of state residents who are accepted as students. Cutting the number of students risks reduced appropriation by the legislature.

Residencies are another matter. Residency numbers are entirely determined and governed by the residency director of each program. There is no national process whereby residency numbers are increased or decreased or controlled. That's entirely in the voluntary sector. There was an attempt about five years ago to set up a national commission to do that. This failed and we have no body, no institution that is looking except in a very superficial way at the number of residencies that are there.

Dr. Avery McMurry: You mean the specialty groups or specialty societies have not brought pressure or not brought some sort of control to limit the numbers of residencies in their own specialties?

Dr. Estes: Not quite true! Some specialties have become quite concerned about this and some specialties have done something about it within themselves. I believe I'm right that neurosurgery has been one of those, has been concerned and has been active in cutting back the numbers of trainees, but that is entirely within that discipline.

There is no overall look at the number of residencies country wide, specialty by specialty. If such a control mechanism occurs, it occurs entirely within the walls of that specialty. There is no overall look at numbers.

Dr. Jack Hughes: I suspect that a lot of us have some ideas of what the effect of excess physicians will have on the physicians themselves.

Dr. Estes: Some results may be regarded as favorable. Some comment that there will be more care and that cannot be all bad! The doctor may spend more time per patient. There will be better distribution of doctors in smaller towns and less attractive areas. There will be more competition and those who feel that competition is likely to produce better pricing feel that that would be a plus.

Finally, less stress on the physician. In 1978 I sat on an Institute on Medicine committee that looked at manpower. We decided that the number of physicians in the country was not likely to be in striking excess because we used a "fudge" factor that was related to the amount of time doctors wanted to spend with their practice. At that time, most doctors were spending about 60 hours a week. It was our judgment that the numbers of hours spent per week would decrease as doctors would like to become like everybody else and work something less than that — maybe 50. The amount of extra work that would be required to replace those hours requires more doctors and therefore we were not quite sure there was going to be that much excess.

Whether this is going to occur or not I don't know. Unfortunately, if there is less time spent per day in seeing patients, that probably means less income and I do not know whether doctors will stand still for that.

On the negative side the following points are made. It is a uniform opinion that costs will rise strikingly because more doctors will increase the number of procedures done, the number of things that are carried out, the number of tests ordered, and so forth. Unnecessary care will increase, productivity will decline. If you spend less hours per day, the productivity of each doctor is lower. Competition with the hospital will increase. We're already seeing this. Doctors are building their offices across the road from the hospital in order to garner more of the income the hospital has been getting for their own pocketbooks as patient numbers go down. "Town-gown" conflicts will increase as medical centers are forced to depend on their practice income.

Speaker from the floor: What is the present fate of the American school graduate who cannot find a residency training program?

Dr. Estes: I don't know. To my knowledge, we have never had a student we couldn't place. It might require a little struggle but, again, I think the medical schools in this state are high quality medical schools and compete well. I think there will be those who will probably take residencies they don't want. There will be those who will take jobs they don't want in order to delay a year in order to get back in next year. It will delay people.

Dr. Bruce Blackmon: I'm not really sure that we're that over-doctored. We have many physicians now who never see the patient and are still doing a good job in pathology, radiology, immunology, research, etc. With increased services we may not have a surplus.

Dr. Estes: This is a good comment. Flexner in 1910 had no way to know that the number of specialties was going to burgeon as it has and will in the next 50 years. The physicians who were there in 1910 were, for the most part, generalists. They were distributed very widely in every small town and hamlet that, in Flexner's view, had their oversupply of doctors.

It does require more doctors in the mode that we now practice medicine than would have been required in 1910 and I don't think anybody thought we had too many doctors in 1978 when our numbers were about comparable to 1910. But what's going to happen in 2000 when we have even fewer patients per doctor?

Dr. O'Brien: Can you make any predictions of the effect of the increasing number of women students and of an increasing number of physician/physician marriages? It does seem to me that it's a little unlikely that both of those physicians in a traditional physician/physician marriage will work at the same level.

Dr. Estes: Among the other trends that are seen in medical schools today is the striking increase in the number of women. A third to a half is not unusual. The odds are that many women doctors will work fulltime at their profession. Young women who are in medicine very often stop practicing for the period of childbearing and a few months thereafter, but almost all come right back to work. In our institution and community, child care is delegated to someone else in the home and the women physicians go right back to work.

Dr. Duncan Yaggy: I think it is really too early to speculate about how the women now being trained will behave as practicing physicians. I know one phenomenon that is of concern to a number of feminists if you read their press. It is that they behave more and more like men so that any differences that have been observed up until now — sexual differences — are likely to be minimized, it would appear. Another thought is that the increasing number of women physicians will make it more and more easy to set up HMOs and other prepaid practice plans. In these arrangements, regular hours and secure monthly income are attractive to many women.

Dr. McMurry: Are there any checks and balances on the number of foreign physicians coming into the country?

Dr. Estes: Beginning about 1975, there were laws passed that strikingly modified the ability of doctors to enter this country. It is now very tough for a foreign national trained in a foreign medical school to get into this country. Those rules and regulations have been tightened and I think tightened appropriately, and the number of foreign trained physicians who might be inadequately trained is strikingly decreased. The real concern now is not that group. The concern is over the U.S. citizen who goes to a foreign medical school, or who goes to a Caribbean medical school, perhaps not meeting the standards of U.S. medical schools, and who is as legally entitled to come back to this country as you or I when we go overseas on a trip. This group has increasing numbers and increasing political power.

In the state of New York, the legislature has passed laws which have in effect overridden the certification process which U.S. medical schools must follow. They have independently recognized the validity of Caribbean medical schools because so many of the young men and young women from New York who have gone to these schools have political power in the legislature of that state.

Dr. Thomas Marshburn: What are the figures from western Europe in regard to physician production?

Dr. Estes: Worse than ours! If our situation is considered bad, theirs is worse. Well, I have to qualify that. It depends on the country. Most of the north European countries have been fairly restrained in their training of doctors. Britain has been fairly restrained although I hear now from friends there that they view themselves as having far too many doctors and they would like to cut back. The south European countries, particularly Italy, have been prolific in training doctors. The schools have no authority to restrain any young man or woman who wants to go into medical school. If they meet the criteria, they are admitted. One medical school I have knowledge of admitted some 2,000 students to their first-year class even though their classrooms could hold only a couple of hundred students. They also washed out some 1,500 or so the first year, so it was a kind of ruthless system. But nevertheless they graduate lots of doctors. I think the whole world is probably experiencing this.

Dr. Marshburn: Facing such a vast surplus, what do you foresee for the training and continued use of physicians' assistants down the road?

Dr. Estes: This question always comes up, the question as to what's going to happen to PAs and nurse practitioners. The excess number of doctors is probably going to spawn competitive practice arrangements that use price as a heavy bargaining chip and in any organizational setting in which price is heavily emphasized, the utility of nurse practitioners and PAs is going to be increased rather than decreased. This is already clear around us. Those elements of our society that have trouble balancing their budgets are already using PAs and NPs much more heavily than other segments of society. The State, for example, hires large numbers in the prison system and mental health system, those areas that foreign physicians once moved into in great numbers. Also, HMOs are using large numbers for the same reason. Now, there is only one PA or NP trained per 10 or so physicians, so we're not talking about a large number of PAs or NPs. My own thought is that the number of these training programs is going to decrease fairly strikingly in the next decade as federal money for the funding of these programs goes out. I think we're going to see fewer programs and we're going to see somewhat fewer trained, but those who are trained are going to find a place as they do now.

Dr. Henderson: In view of the ineffectiveness of planning in the past and in view of the changing technology in which you cannot really predict what the needs are going to be 10 years from now, why should we listen to planners at all and not leave it up to the supply and demand of the basic economic system?

Dr. Estes: We never have really listened to planners in the past. We have gone merrily on in spite of what people told us 10 years ago. The manpower generating system within medicine is like a battleship that requires 50 miles to turn around. We have a huge ponderous machine that requires years and years and years to put into reverse. The medical manpower system that we have in place now is training some 17,000 young men and women per year, whereas we were training about half that number in 1970. When will we begin to throw it into reverse?

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Meeting the Medical Care Needs of the Geographically Underserved: Emergency Care

E. Jackson Allison, Jr., M.D., M.P.H.

IT is indeed a personal honor to be here today to share with the attendants of the First General Session of the North Carolina Medical Society some thoughts and comments concerning emergency medicine and how we are attempting to meet the health care needs of the medically underserved in eastern North Carolina.

When the East Carolina University School of Medicine was established, the institution was given three mandates. First, to provide physicians to the underserved rural areas of North Carolina. Primarily, this means providing family physicians and secondarily, other primary care physicians for the citizens throughout the state. Out of our first 64 graduates, 25 percent are in family medicine residency training programs, which is twice the national average. A rate of 22 percent was achieved by our last graduating class.

The second mandate was to bring more minority and disadvantaged students into the School of Medicine's educational program at ECU. Black students comprise 10 percent of our student body, with other minority backgrounds making up another 5 percent. Women comprise 22 percent of our students.

The third mandate was to establish a regional health care system in eastern North Carolina and to try to transform Pitt County Memorial Hospital from a sleepy community facility into a regional tertiary care center. The State of North Carolina's contribution has been to add 200 beds to the hospital facility which now has a total of 570 beds. A neonatal intensive care unit was established, which is flourishing although it is not big enough. As with most things medical in the east, we continue to play catch-up.

Our cardiology services have expanded exponentially. We have a burgeoning cardiocatheterization service, and we anticipate the initiation of a full-fledged cardiovascular surgery service in the fall of 1983.

The oncology program is developing by leaps and bounds and we hope that our radiation treatment center will be completed in the summer of 1984.

We have revamped our pathology and laboratory services at Pitt County Memorial Hospital. A renal transplantation service has been established, which boasts of major accomplishments in both patient care and research efforts.

Emergency Medicine in Eastern North Carolina

The specialty of emergency medicine had its beginnings organizationally in 1968 when eight physicians walled themselves up in a small room in East Lansing, Michigan, to form what eventually became the American College of Emergency Physicians, formally in 1972. Specialty status with the American Board of Emergency Medicine was obtained in 1979 and emergency medicine became the twenty-third specialty in this country, working through the American Board of Medical Specialties, the AMA and the AAMC, and now boasts a membership in excess of 16,000 nationally.

On July 1, 1980, with the formation of the Department of Emergency Medicine at the East Carolina University School of Medicine, the emergency room at Pitt County Memorial Hospital became the ED, or the Emergency Department, with autonomy and equal representation on the Executive Committee.

One of our first accomplishments was to establish a Rolodex system in order to try to protect the private sector. When non-emergent patients present to the Emergency Department, we have available a Rolodex card on each and every physician who practices in the county of Pitt. We gave these physicians the option of how they would like us to deal with their private patients, particularly those who present during off hours. We gave them a "laundry list" from which to choose and asked them to be specific about how they would like to have their patients dealt with. Examples include "Do you want us to see them and give you a call?" "Do you want us to call you and let you evaluate them?" "Would you like to have the resident of your specialty screen these patients?" "Would you like these patients to be triaged from 9 to 5 and not be called otherwise?"

Two and a half years ago we established a triage system with a registered nurse at the front desk to help screen patients and to deal with the fact that at Pitt County Memorial Hospital many of the presenting patients require immediate emergency care.

We have developed a nursing clinical instructor position in the Emergency Department which has had a great deal of impact not only on the training of new nurses who work in the ED, but also on continuing in-service education. We have upgraded the training of the ED nurses in our cardiac and trauma life support systems. We stabilized our head nurse situation in January 1983, which again has had a very

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From the Department of Emergency Medicine, East Carolina University School of Medicine/Pitt County Memorial Hospital, Greenville, NC 27834.

positive impact on nursing care in the Emergency Department.

During the past three years we have emphasized disaster planning and drills, and during the past year we have had occasion to profit by this training because of two real disasters. On March 2, there was an apartment explosion in the city of Greenville which completely reduced an entire three-story apartment block to an incredible pile of ground-level rubble. One person was killed and 12 others were injured seriously, including one critically. On April 18 there was a bus crash within two miles of PCMH after which we had 65 injured children and their parents present all at one time to the Emergency Department. During the first disaster the system was exercised acutely; during the second, our disaster plan was severely taxed.

Emergency Medical Services Involvement

East Carolina University School of Medicine is the only institution of its kind nationally and internationally that has taken on the mandate of training emergency medical technicians (EMTs) at both the intermediate and paramedic level. To date we've trained 250 EMT-Intermediates and have recertified another 150 for a total of 400 field personnel.

In August 1982 we had a site visit from Wisconsin which included an emergency physician, an RN, an EMT-Paramedic, a hospital administrator and a county commissioner. This group informed us that we at ECUSOM had the reputation of having the finest EMT-Intermediate training program in the world, something of which we are very proud.

In September of last year we were awarded the contract to train the very first group of EMT-Paramedics east of Durham, and there are 19 candidates in training in Wilson County under our aegis. We are hoping to receive the contract to train a similar group of paramedics in the county of Dare in the fall. Presently, we are still waiting for the political situation to improve in Pitt County in order to initiate paramedic training there because we feel that of all the cities and counties in eastern North Carolina, Greenville-Pitt has the greatest need for paramedical utilization on the street.

The Department of Emergency Medicine at the ECU School of Medicine sponsors an annual EMS Seminar, and this past March we boasted an attendance in excess of 200 EMTs and emergency nurses who attended from all over North Carolina. We've also been involved in other local, regional and statewide seminars in emergency medicine which have been held in Charlotte, Raleigh, Asheville, Nags Head and Greenville. In the past 25 months the Department of Emergency Medicine has been involved in 22 Advanced Cardiac Life Support courses throughout the state, during which time we have trained over 650 MDs and critical care nurses and 77 medical students. In the realm of Advanced Trauma Life Support, our department has been involved in eight courses, having trained 140 physicians, 50 nurses and 41 medical students.

After three years of effort, our department was successful in securing a half-million dollars of federal funding with an equal amount of local matching funds which have been utilized to improve the provision of emergency medical care in eastern North Carolina. We are especially proud of the fact that we were able to obtain $40,000 from local private industries as "seed monies" before we received the federal funds. The money has been used to buy equipment for rescue squads, hospitals, and emergency departments throughout the 29 counties of eastern North Carolina and to improve communications for Advanced Life Support in the counties of Wilson, Dare, and Pitt. Eastern Carolina Emergency Medical Services Systems (ECEMSS), a non-profit organization located in Washington, North Carolina, has been responsible for administering these grant monies. I have served as medical director for ECEMSS for the past three years.

The Department of Emergency Medicine at ECUSOM in cooperation with the ECEMSS has developed critical care protocols to help smaller hospitals stabilize and transfer critically ill and/or injured patients to higher levels of care. In addition, we've established a quarterly Physicians' Forum whereby all the medical directors and audit and review chairs meet every three or four months in Greenville and work out policies referable to emergency medicine in our region. We have developed patient transfer agreements for all 26 hospitals in eastern North Carolina and we have dealt with the issue of recognition of EMT-Intermediates across county lines.

Our department has trained over three-fourths of the members of the rescue squads in eastern North Carolina in the use of Medical Anti-Shock Trousers, and we've tried to reach as many emergency department staffs and medical staffs in our region as well. Within the next few months Pitt County Memorial Hospital is slated to receive final designation as a Level II Regional Trauma Center. In 1982 PCMH was designated as the regional resource hospital for Advanced Life Support in the pre-hospital phase for the 29-county area of eastern North Carolina.

Prospects for the Future

Efforts are underway to establish a Regional Poison Control Center at PCMH. We meet two of three criteria — diagnosis and treatment — but one of the overwhelming obstacles is to provide 24-hour a day information on poison control, not only to patients but also to physicians in eastern North Carolina. We hope to form a consortium on campus, which will include the Departments of Emergency Medicine, Pediatrics, Family Practice, Pathology and the Pharmacy at PCMH.

One event of which we are very proud is the establishment of a residency training program in emergency medicine which will begin on July 1 of this year. We are going to begin very slowly and deliberately. We will have only four residents initially at the second-year level, and eventually we will have four at each level of PGY's I, II and III, a total of 12 residents. Our goal is to provide emergency primary care physicians for the 26 hospitals in eastern North Carolina and the 1.2 million citizens in our area.

We've been working on the establishment of a helicopter service in eastern North Carolina, a project which has been going slowly because it will take literally $500,000 "to get it off the ground."

The Department of Emergency Medicine at ECU has been quite active with research efforts during the past three years. Presently we are trying to sort out the effects of Medical Anti-Shock Trousers and any untoward sequelae, including severity of illness/injury, suit pressure, and time. We are also investigating the utilization of emergency drugs down the endotracheal tube, comparing this route of administration with intravenous administration. Furthermore, we are applying for a rather large grant to study the role of calcium antagonists in acute resuscitations.

During the past three years we've had over a dozen publications appear in the medical literature. Our department is now working on four books, three of which are concerned with EMT-Intermediate training programs, and the fourth on cardiac pacing. We've set a goal to establish the medical literature for EMT-Intermediate training programs in this country.

Conclusion

We are very proud of the progress the Department of Emergency Medicine at the East Carolina University School of Medicine/Pitt County Memorial Hospital has made in the past three years. We now boast a faculty of nine physicians, one mobile intensive care nurse, one physician's assistant, and one Master's level administrator. We hope to continue to provide emergency primary care training for resident physicians, physicians in practice, emergency department and critical care nurses, and EMTs at all levels in an effort to continue to improve the provision of emergency medical services throughout the 29-counties of eastern North Carolina and to the state at large.

The Department of Emergency Medicine at ECUSOM/PCMH is particularly indebted to William E. Laupus, M.D., Vice Chancellor and Dean of the East Carolina University School of Medicine, and to Mr. Jack W. Richardson, President of Pitt County Memorial Hospital — these two gentlemen have provided immeasurable and unfailing support for our department over the past three years.

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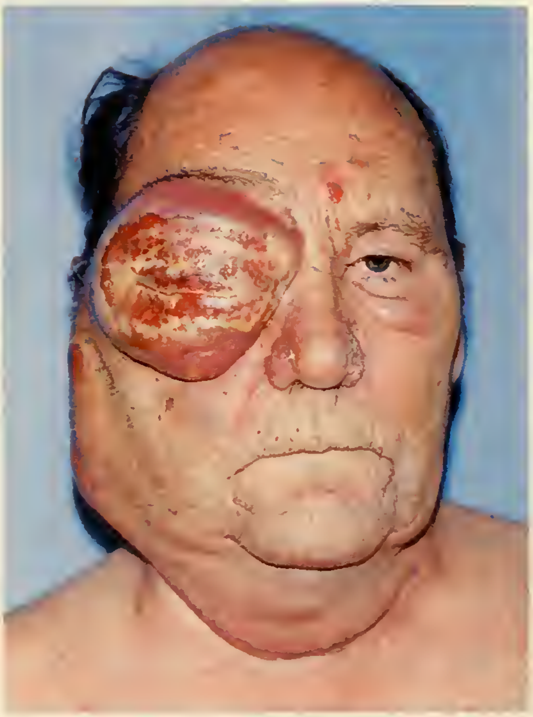

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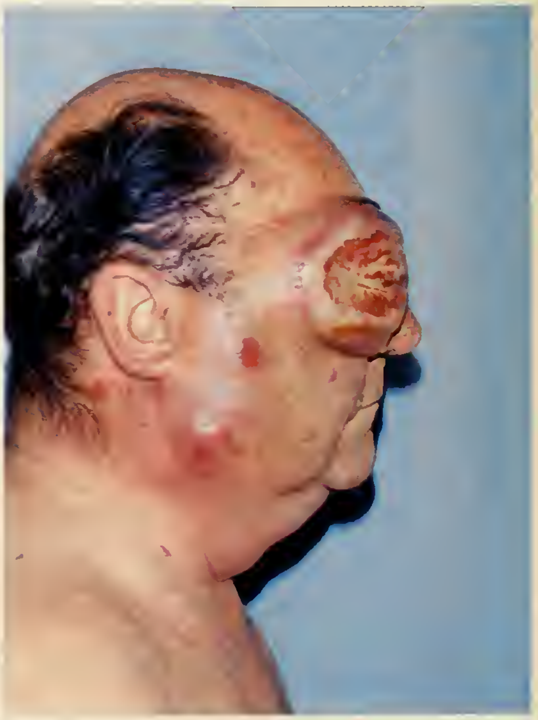

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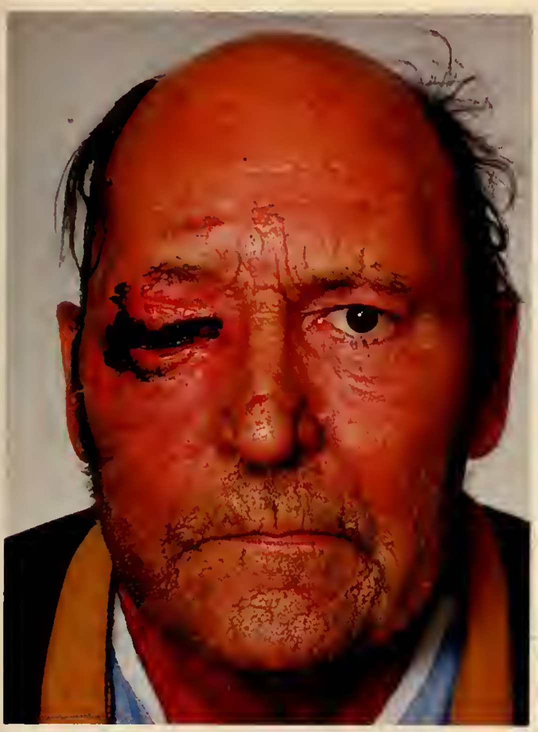

Figure 3.

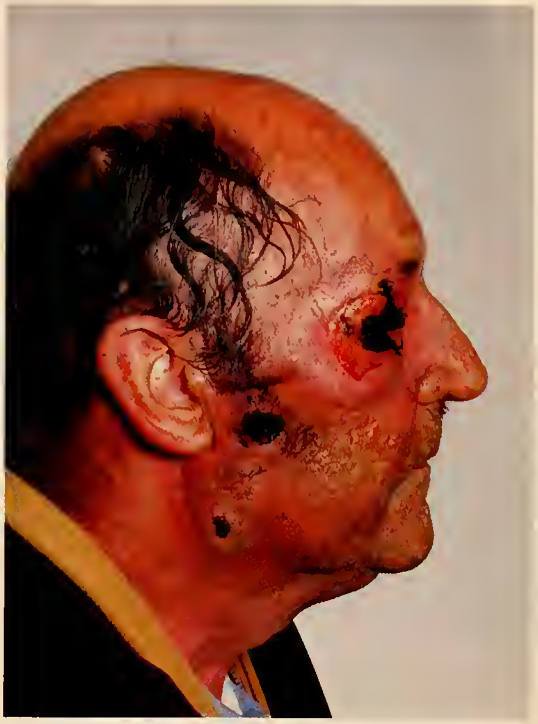

Figure 4.

This small cell carcinoma of the lung responded in 6 weeks to combination chemotherapy, with resulting relief of the severe respiratory distress it was causing (figures 5, 6, 7 and 8).

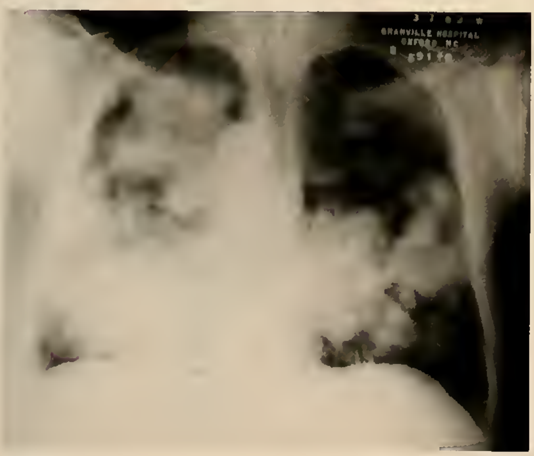

Figure 5.

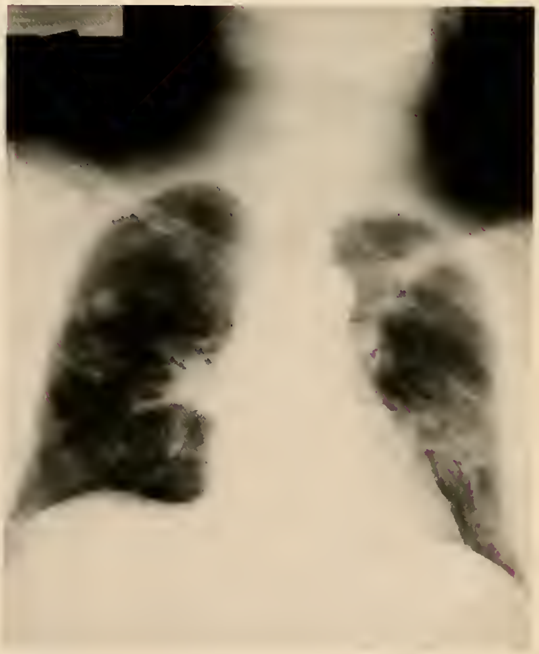

Figure 6.

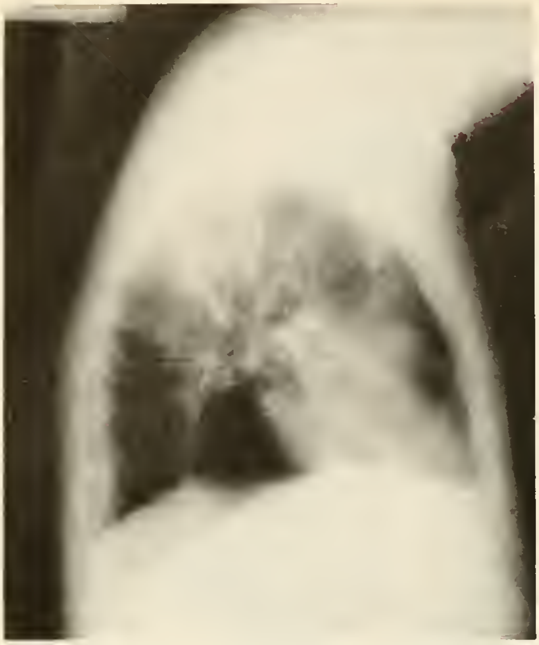

Figure 7.

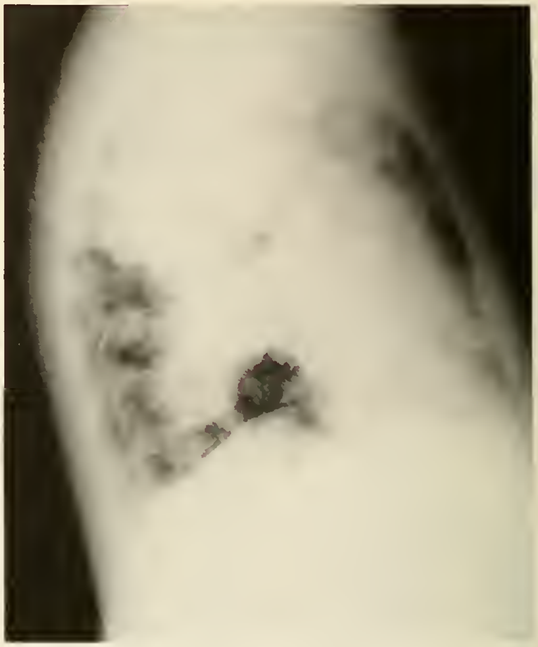

Figure 8.

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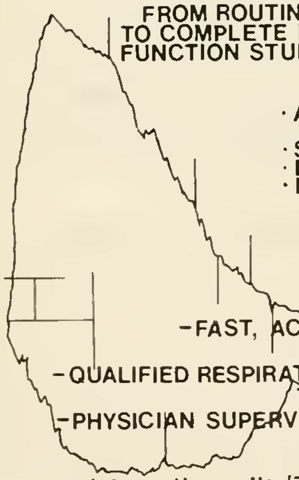

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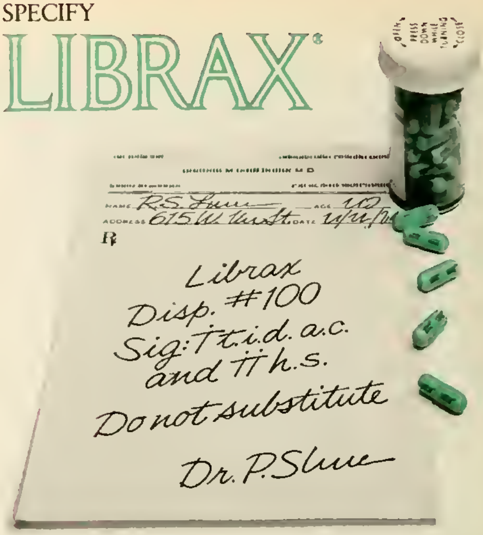

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Each capsule contains 5 mg chlordiazepoxide HCl and 2.5 mg clidinium bromide

Please consult complete prescribing information, a summary of which follows:

* Indications: Based on a review of this drug by the National Academy of Sciences—National Research Council and/or other information, FDA has classified the indications as follows: "Possibly" effective: as adjunctive therapy in the treatment of peptic ulcer and in the treatment of the irritable bowel syndrome (irritable colon, spastic colon, mucous colitis) and acute enterocolitis. Final classification of the less-than-effective indications requires further investigation.

Contraindications: Glaucoma; prostatic hypertrophy, benign bladder neck obstruction; hypersensitivity to chlordiazepoxide HCl and/or clidinium Br.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants, and against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). Physical and psychological dependence rarely reported on recommended doses, but use caution in administering Librium® (chlordiazepoxide HCl/Roche) to known addiction-prone individuals or those who might increase dosage; withdrawal symptoms (including convulsions) reported following discontinuation of the drug.

Usage in Pregnancy: Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy. Advise patients to discuss therapy if they intend to or do become pregnant.

As with all anticholinergics, inhibition of lactation may occur.

Precautions: In elderly and debilitated, limit dosage to smallest effective amount to preclude ataxia, oversedation, confusion (no more than 2 capsules/day initially; increase gradually as needed and tolerated). Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider pharmacology of agents, particularly potentiating drugs such as MAO inhibitors, phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions reported in psychiatric patients. Employ usual precautions in treating anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship not established.

Adverse Reactions: No side effects or manifestations not seen with either compound alone reported with Librax. When chlordiazepoxide HCl is used alone, drowsiness, ataxia, confusion may occur, especially in elderly and debilitated; avoidable in most cases by proper dosage adjustment, but also occasionally observed at lower dosage ranges. Syncope reported in a few instances. Also encountered: isolated instances of skin eruptions, edema, minor menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido—all infrequent, generally controlled with dosage reduction; changes in EEG patterns may appear during and after treatment; blood dyscrasias (including agranulocytosis), jaundice, hepatic dysfunction reported occasionally with chlordiazepoxide HCl, making periodic blood counts and liver function tests advisable during protracted therapy. Adverse effects reported with Librax typical of anticholinergic agents, *i.e.*, dryness of mouth, blurring of vision, urinary hesitancy, constipation. Constipation has occurred most often when Librax therapy is combined with other spasmolytics and/or low residue diets.

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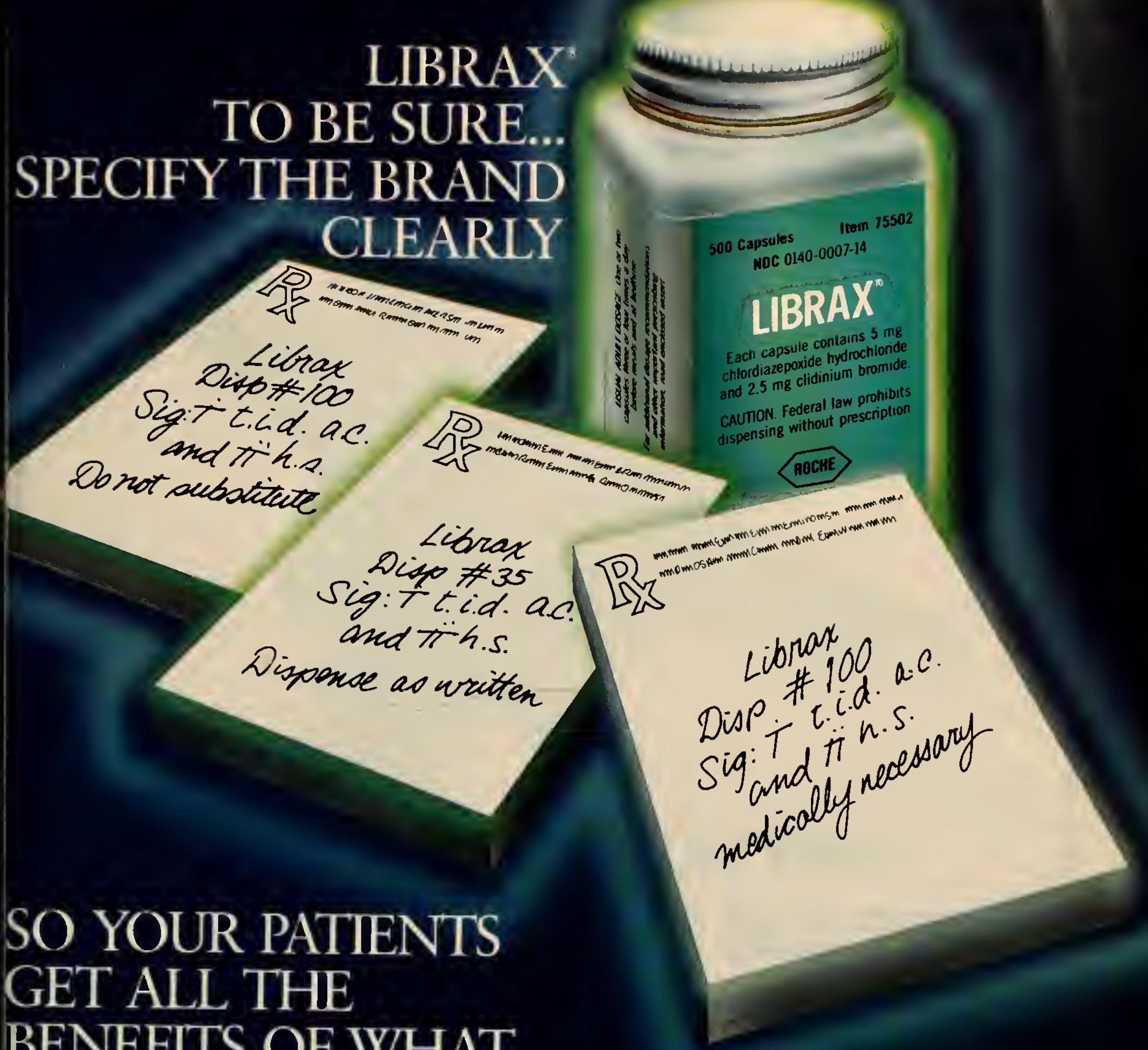

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*Librax has been evaluated as possibly effective adjunctive therapy in the treatment of irritable bowel syndrome and duodenal ulcer. Please see summary of prescribing information on the preceding page.

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Bulletin Board

Continuing Medical Education

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IN STATE

November 10-12
"Medical Alumni Weekend"
Place: Durham
Info: Janet Sanfilippo, Box 3407, Duke University Medical Center, Durham, NC 27710. 919/684-6347

November 13-16
"Basic Clinical Teaching Skills"
Place: Rougemont
Credit: 20 hours, Category 1 AMA; AAFP prescribed
Info: Dr. Katharine Munning, 407 Crutchfield Street, Durham, NC 27710. 919/471-2571

November 14
"AIDS — Acquired Immune Deficiency Syndrome"
Place: Durham
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

November 15
"Records and Other Necessities"
Place: Wingate
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

November 15-16, 21-22
"Mini-Fellowship in Clinical Obstetrical Ultrasound"
Place: Chapel Hill
Credit: 25-30 hours, Category 1 AMA
Info: Marge Riddle, 4006 Old Clinic Building 226H, UNC School of Medicine, Chapel Hill, NC 27514. 919/966-5096

November 16
"Antibiotics and Infectious Disease"
Place: Sanford
Credit: 3.5 hours, Category 1
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

November 29
"Records and Other Necessities"
Place: Wilmington
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

November 30-December 3
"35th Annual Scientific Assembly"
Place: Greensboro
Credit: 16 hours AAFP
Info: NC Academy of Family Physicians, Box 20146, Raleigh, NC 27619. 919/781-6467

December 1-3
"Second Comprehensive Breast Disease Symposium"
Place: Winston-Salem
Credit: 20 hours, Category 1 AMA
Fee: $300
Info: James F. Martin, M.D., 300 S. Hawthorne Road, Winston-Salem, NC 27103. 919/748-4505

December 3, 10, 17
"ECG Interpretations"
Place: Chapel Hill
Info: Leonard S. Gettes, M.D., 353 Burnett-Womack Building 229H, UNC School of Medicine, Chapel Hill, NC 27514. 919/966-5203

December 3
"Residents' Day in Ophthalmology"
Place: Chapel Hill
Credit: 5.5 hours, Category 1 AMA
Info: Baird S. Grimson, M.D., UNC School of Medicine, Chapel Hill, NC 27514

December 6
"Duke Tuesday"
Place: Durham
Info: Linda Mace, Box 3707, Duke University Medical Center, Durham, NC 27710. 919/684-2033

December 8-10
"Microcomputers in Medical Education"
Place: Chapel Hill
Credit: 18 hours, Category 1 AMA
Fee: $325
Info: Ruth De Bliek, 322 MacNider Building 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/966-3641

December 8-10
"Pediatric Imaging Seminar"
Place: Winston-Salem
Credit: 20 hours, Category 1 AMA
Info: Postgraduate Course in Medical Sonics, 300 S. Hawthorne Road, Winston-Salem, NC 27103. 919/748-4505

December 21
"Obstetrical Analgesia"
Place: Sanford
Credit: 2 hours, Category I
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

North Carolina Medical Society Auxiliary

Pro golfer Jay Haas took time from the PGA tour last spring to participate in the North Carolina Medical Auxiliary's campaign against drunk driving. The former Wake Forest golf star taped a persuasive 30 second message stressing the Auxiliary's theme which is being aired on radio stations throughout North Carolina.

Haas was recruited to do the spot announcement by Dawn Long, Greensboro, and Helen Prichard, Winston-Salem, who head a special health education project for the Auxiliary. Responding to the report of the Governor's Task Force on DUI (driving under the influence), a state-wide public awareness project was launched in November 1982 by the Auxiliary leadership to educate the public about the crisis on the highways resulting from drunken drivers.

Long and Prichard, co-chairmen for the Auxiliary project, spearheaded the campaign which had as its first priority passage during the recent session of the State Legislature of the Safe Roads Act for cracking down on drunk drivers. All county auxiliaries were contacted and encouraged to join an intensive telephone and letter-writing campaign to their legislators indicating medical auxiliary support of the bill. The co-chairmen appeared at a joint session of the legislature and spoke on the health education aspects of the bill.

In addition to support of this vital legislation, auxilians have been encouraged to take direct action in the fight against drunk drivers. Many have joined local court-monitoring groups which are letting the public know if DUI cases are dealt with fairly by lawyers and judges. Membership in MADD (Mothers Against Drunk Driving) chapters throughout the state has been urged and new chapters have been formed where none were in existence. Pamphlets explaining RADD (Report a Drunk Driver) have been obtained from the Highway Patrol and distributed.

Jay Haas' public service announcement has been a successful part of the public awareness project. His prestige as a golf professional speaking out against the tragedy of drunk driving has been a positive addition to the ongoing campaign. Ninety-two reel to reel tapes have been purchased by 42 county auxiliaries for use by local stations. These are still available at $2 per tape from Mrs. Paul Long, 923 Fairgreen, Greensboro 27410. Medical societies which do not have auxiliaries are encouraged to purchase and distribute the tapes in their area.

"Because the DUI bill has now become law doesn't eliminate the need for continued public awareness of the danger on our highways from drunk drivers," according to Long. "Our thrust will now be on public education. What we would like to see is effective health education from kindergarten to adulthood about the effects of alcohol."

Carol Hayes
1715 Dunleith Way
Greensboro, NC 27408
919/282-2255

New Members

CATAWBA

Alice Bishopric (OBG), 1205 N. Center Street, Hickory 28601

DURHAM-ORANGE

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Anthony Glenn Carraway (Student), 7-F Estes Park, Carrboro 27510
Richard Narland Cochrane (Resident), 4 Rocky Knolls, Chapel Hill 27514
Thomas Morgan Dreyer (PS), Div. of Plastic Surgery, UNC, Med. Sch. Wing D. 208H, Chapel Hill 27514
Jonathan Joseph Dutton (OPH), 900 W. Benton St. 315C, Iowa City, Iowa 52240
Joseph Cholmondeley Greenfield, Jr. (IM), Dept. of Medicine, Box 3246, Duke Univ. Medical Center, Durham 27710
Thomas Lee Pope, Jr. (DR), 906 Grove St., Chapel Hill 27514
Harvey Craig Price (Resident), 1905 Sturbridge Court, Raleigh 27612
Dianne Lynnette Scott (AN), Box 3094, Dept. of Anes., Duke Univ. Medical Center, Durham 27710
Ann Elise Weinrich (D), 2609 N. Duke St., Ste. 505, Durham 27704

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L. Don Abo Claudius Luvis (IM), 1119 Churchill Dr., Gastonia 28052

GRANVILLE

Peregrina C. Labay (PM), 3717 Cambridge Road, Durham 27705

HAYWOOD

Michael Jason Masters (D), 102 Hospital Dr. Suite #6, Clyde 28721

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Faiqa Aftab Qureshi (PD), 421 S. Peachtree St., Ahoskie 27910

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Victor Ivan Suvillaga (Resident), New Hanover Mem. Hosp., 2131 S. 17th St., Wilmington 28401
William Marion Williams, III (CLP), 2255-0 Wrightsville Ave., Wilmington 28403
Siew-Jyu Wong (PD), 2908 Harvard Drive, Wilmington 28403

ONSLOW

Ronald Mack Hammock (U), 200 Doctor's Dr. Suite C, Jacksonville 28540

PERSON

Robert Middleton Foster (FP), 214 Sievers Circle, Roxboro 27573

PITT

Henry Lawson Huggsin, Jr. (Student), 16A Courtney Square, Greenville 27834

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Mark Dwight Glenn (P), 207 W. 24th St., Lumberton 28358

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William Tucker Cline (GS), 3400 Executive Drive, Raleigh 27609
Thomas Paul Cornwall (PYA), 1001 Navaho Dr. Suite 107, Raleigh 27609
John Albert Lang, III (IM), 615 St. Mary's St., Raleigh 27605
Richard Allen Reavis (GP), Route #5, Box 260-A, Raleigh 27604

WAYNE

Gerald Garfield Mulvaney (OBG), 401 N. Herman St., Goldsboro 27530

In Memoriam

Octavius Blanchard Bonner

Octavius Blanchard Bonner, M.D. died July 31, 1983 after a short illness at North Carolina Memorial Hospital in Chapel Hill, North Carolina. Dr. Bonner was born in 1928 in High Point, North Carolina, son of Dr. Octavius Blanchard Bonner and Mrs. Ida Owens Bonner. Dr. Bonner received his undergraduate education at the University of North Carolina at Chapel Hill and completed his medical degree at Duke University Medical Center where he served as an intern in obstetrics and gynecology. He served as a Major in the Medical Corps of the United States Air Force from 1954 to 1956, and then completed his residence in obstetrics and gynecology at North Carolina Memorial Hospital where he served as chief resident, completing his training in 1960. Subsequently, he moved to Daytona Beach, Florida where he practiced obstetrics and gynecology until his death.

Dr. Bonner was a diplomate at the American Board of Obstetrics and Gynecology and Fellow of the American College of Obstetrics and Gynecology. He had served as president of the Robert A. Ross Obstetrical and Gynecological Society.

Dr. Bonner is survived by his wife, Charlotte Bonner. Also surviving are five children: Mary Ann Coe and Cynthia Stellitano, Gainesville, Florida; Elizabeth Russell, Octavius Blanchard Bonner III, and Thomas Alexander Bonner, Daytona Beach, Florida. Also surviving is his sister Ann Bonner Nebel, Chapel Hill, North Carolina.

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INDICATIONS: For the treatment of the symptoms of seasonal and perennial allergic rhinitis and vasomotor rhinitis, including nasal obstruction (congestion).

CONTRAINDICATIONS: Hypersensitivity to any of the components, concurrent MAO inhibitor therapy, severe hypertension, bronchial asthma, coronary artery disease, stenosing peptic ulcer, pyloroduodenal or bladder neck obstruction. Do not use in children under 12 years.

Do not use this drug in patients with narrow-angle glaucoma, obstructive or paralytic ileus, intestinal atony of the elderly or debilitated patient, unstable cardiovascular status in acute hemorrage, severe ulcerative colitis, toxic megacolon complicating ulcerative colitis, myasthenia gravis. Do not use in nursing mothers.

Use in treating lower respiratory tract symptoms, including asthma, is contraindicated.

WARNINGS: Caution patients about activities requiring alertness (e.g., operating vehicles or machinery). Antihistamines are more likely to cause dizziness, sedation, and hypotension in elderly patients. Patients should also be warned about the possible additive effects of alcohol and other CNS depressants.

Usage in pregnancy: Safe use in pregnancy has not been established. Use only when the potential benefits have been weighed against the possible hazards to the mother and child. Note that an inhibitory effect on lactation may occur.

PRECAUTIONS: Use with caution in patients with a history of bronchial asthma, increased intraocular pressure, hyperthyroidism, cardiovascular disease, hypertension, hiatal hernia with reflux esophagitis, intestinal atony of the elderly or debilitated intestinal obstruction, myasthenia gravis, renal function impairment, and ulcerative colitis (severe).

Drug Interactions: MAO inhibitors, Alcohol or CNS depressants, especially anesthetics, barbiturates, and narcotics.

ADVERSE REACTIONS: Prolongs the response to nervous stimulation, potentiates the response to norepinephrine, and inhibits the response to tyramine.

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Cardiovascular System: Hypotension, headache, palpitations, tachycardia, extrasystoles.

Hematologic System: Hemolytic anemia, thrombocytopenia, agranulocytosis.

Nervous System: Sedation, dizziness, disturbed coordination, fatigue, confusion, restlessness, excitation, nervousness, tremor, irritability, insomnia, euphoria, paresthesias, blurred vision, diplopia, vertigo, tinnitus, acute labyrinthitis histeria, neuritis, convulsions.

Gastrointestinal System: Epigastric distress, anorexia, nausea, vomiting, diarrhea, constipation.

Genitourinary System: Urinary frequency, difficult urination, urinary retention, early menses.

Respiratory System: Thickening of bronchial secretions, tightness of chest and wheezing, nasal stuffiness.

DOSAGE AND ADMINISTRATION: Dosage should be individualized according to the needs and response of the patient. Adults: one capsule every 8 to 12 hours not to exceed 3 capsules daily. Not for use in children under 12 years of age.

OVERDOSAGE: Treatment of the signs and symptoms of overdosage is symptomatic and supportive. In the event of overdosage, emergency treatment should be started immediately.

Treatment: The patient should be induced to vomit, even if emesis has occured spontaneously. Vomiting by the administration of ipecac syrup is a preferred method. However, vomiting should not be induced in patients with impaired consciousness. Stimulants (analeptic agents) should not be used. Vasopressors may be used to treat hypotension. Short-acting barbiturates, diazepam or paraldehyde may be administered to control seizures. Hyperpyrexia, especially in children, may require treatment with tepid water sponge baths or a hypothermic blanket. Apnea is treated with ventilatory support.

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Letters to the Editor

The Editor Receives Favorable Comment

To the Editor:

In my training years in Baltimore, it was a fact of life that Dr. Eugene Stead was probably the best direct ophthalmoscopist in the United States. Many of the Hopkins people had come through the internal medicine residency at Duke and described Dr. Stead's unusual acumen with the direct ophthalmoscope. We young ophthalmologists thought it unusual that an internist would be so adept, but former Duke interns at Hopkins described the anguish that could result if they wrote on a patient's chart "EENT-Negative." Dr. Stead was apparently unwilling to accept this sort of notation and was always able to demonstrate fundus abnormalities that should have been noted. As TEFRAS and DRGs begin to control our medical workups, this examination will become more important as a window on systemic disease.

David E. Eifrig, M.D.
Chairman, Ophthalmology
University of North Carolina
Chapel Hill 27514

To the Editor:

The editing has improved the paper tremendously. I am grateful for your help. In fact, I think you should be coauthor.

S. D. McPherson, Jr., M.D.
McPherson Hospital
Durham 27701

Communication Remains Difficult

To the Editor:

I had been procrastinating for several weeks. I knew I needed to visit the ophthalmologist but I simply never got around to making the appointment. Things always seemed better in the morning, and I had so much to do. In the middle of the night, however, I would wake suddenly with a knife-like pain in the left eye. Thankfully the pain would disappear in 30 minutes, leaving only a gritty sensation. On one Wednesday morning as I was heading for the clinic I lightly rubbed my eye, and was struck with horrible pain. I could think of nothing but relief and made my way to the office of an ophthalmologist in the medical complex quite some distance from my office.

They call it liquid gold, those precious drops of eye anesthetic which instantaneously and completely relieve eye pain. I enjoyed such relief that I didn't flinch as the doctor scraped away my torn cornea with a small scalpel. I asked "Will this hurt very badly tonight?" "Yes" was the answer, "it takes at least 24 hours to heal and here is a prescription for codeine." As I was leaving I casually inquired about the duration of the anesthesia. The words "about 15 minutes" hit like a ton of bricks. I knew I had better hustle to get back to my office in order to find my husband, get the codeine, and get home. The office was a good hike from my current location. Just as I stepped into the elevator and the doors closed behind me, I was numbed with intense and paralyzing pain. I could open neither eye, for opening even the healthy eye meant reciprocal movement of the left eye and horrible pain. I was blind and began reaching desperately for the elevator buttons to get out. I was not alone in the elevator and, to shorten a long story, my fellow passenger took me under her wing and helped me locate my husband who took me home. The pain continued for 48 hours. The codeine helped. The experience was humbling and yet instructive. I learned graphically that to some extent patients are at the mercy of nature and their physicians. I did not anticipate the pain that would leave me helpless and stranded. Had I been told exactly what to expect early enough, I would have planned differently. I was lucky because my problem was short-lived and now I can look back on my predicament with some amusement. We have patients, however, who struggle to get by every day. Perhaps they are unemployed or living on very little income. They cannot afford to miss a day of work. Perhaps they are alone or are single parents with the responsibility of feeding and caring for children. Our helping them to anticipate the impact of illness and therapy on the details of living day by day may save them much suffering and hardship. It means we must be sensitive. It means we must take a little more time to be good at what we do.

Name Withheld By Request

Nostalgia

To the Editor:

Emphasis and priorities have taken a complete turnaround in the past three to four decades. In the 1940s in internal medicine residency training, how long we worked and how little we slept in the course of a week was unimportant. It was considered a privilege to work 21-22 hours a day, and the ability to do it was called stamina, or ability to survive, or only the fit survived. The major bonus to this was you had nothing to distract your interest in learning. You became married to your work, studies, and education. I can remember making rounds with my professor one morning at 0830 when he asked me what this diabetic's urine showed at 0730. I responded that I didn't know; I hadn't checked it since 0600. The professor responded by saying, "I don't understand your lack of clinical curiosity." After going into practice, I found that I could never say no. My patient's needs came before those of my family or my own. This went on for 25 years at 100-110 hours a week. My tongue was hanging out; my children had grown up and I hardly knew them. I had to slow down but didn't know how. I finally gave up my practice, very traumatically, and became a staff physician in a Federal agency, working 40-50 hours per week.

There began many adjustments in my life: patients still held top priority. "Caring" I could not put aside. I came to know my children as adults and became real friends as man to man and man to woman. My wife adjusted to having me home for breakfast and dinner. She really adjusted to having a husband. I now (after 10 years) have an administrative position in this Federal agency, with my chief function being responsibility for patient care.

I have little patience with the physician who is not listening and/or responding to what the patient is trying to tell him about his feelings and needs.

My philosophy may have been extreme and may have mellowed with a little more rest. My interest in the needs of patients has not changed. In this day in which our profession as a whole enjoys the least credibility, the least respect, the most concern about malpractice, the most concern about unavailability and the growing surplus of physicians, I feel that we have a chance to turn our priorities around, showing that we are sensitive to the needs of people and their problems. "A good, caring physician will always be in real demand."

Thank you for letting me share my nostalgia with my colleagues.

Julian Lentz, M.D.
VA Medical Center
Fayetteville

Biking in Safety in North Carolina

To the Editor:

Over the past several years, a number of folks (including myself) have added some sort of exercise to their normal workday. Those who have added jogging or running have probably encountered an increased incidence of leg injuries ranging from simple overuse muscle soreness to tendonitis and stress fractures. Not one to enjoy running with pain, I started riding my bicycle, only to discover that state and federal highways probably represent a greater threat to a bicycle rider's health than running injuries. Looking for safer places to ride, I first bought some county road maps, available from the Department of Transportation for 20 cents each. I then discovered that the DOT has a bicycle program that publishes maps in approximately 40-mile segments of routes between points of interest in the state. There are now 5 routes, including:

1) Manteo to Murphy
2) Raleigh to Wilmington
3) Wilmington to Corapeake (near Va. border)
4) Morganton to Snow Camp (near Chapel Hill)
5) Laurinburg to Kerr Lake (near Henderson)

These routes are mostly on little-traveled secondary roads. Marked are general stores, gas stations, camp grounds, historical areas, and bike shops. They are available (free) from:

Curtis B. Yates
Bicycle Program
North Carolina Department of Transportation
P.O. Box 25201
Raleigh, North Carolina 27611

My family has used several of these routes. We have found them safe and fun. The bicycle program, as run by Mr. Yates, is simply excellent.

C. F. Starmer, Ph.D.
Department of Medicine
Duke University Medical Center
Durham 27710

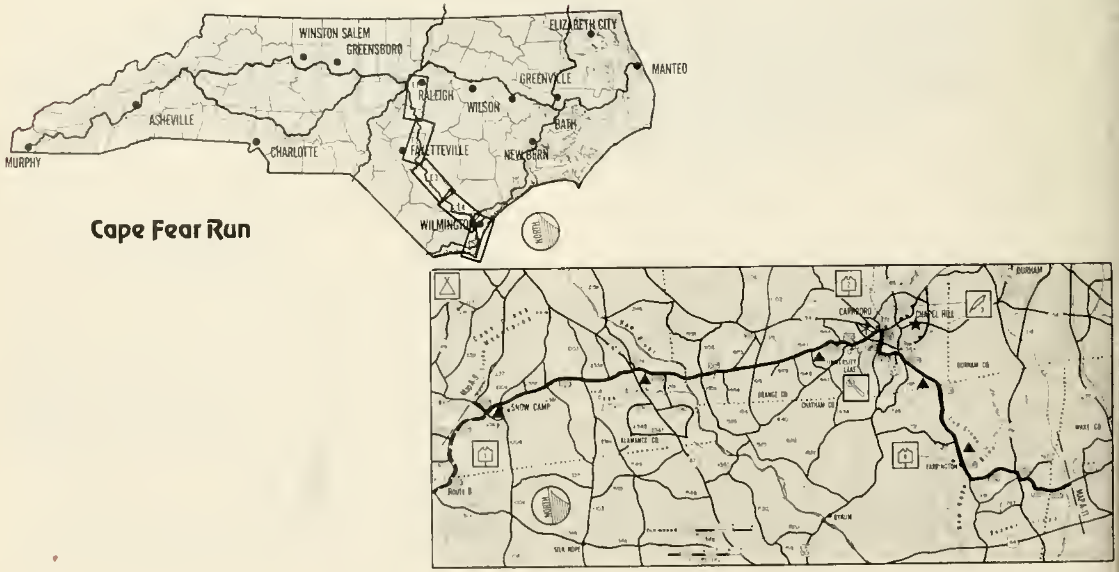
Feedback from Patients

To the Editor:

There has been some controversy about putting the *North Carolina Medical Journal* in the doctor's waiting room. The daughter of a patient with Alzheimer's disease read the discussion of this illness in the *North Carolina Medical Journal* (vol. 44, July 1983). She wrote to Duke for additional information and is enrolling her mother in an ongoing research program. At least, the blue section is being read.

Albert Heyman, M.D.
Box 3203 Duke Hospital
Durham 27710

NORTH CAROLINA BICYCLING HIGHWAYS



Anxious patients improve in just a few days

And what is more reassuring to an excessively anxious patient than medication that promptly starts to relieve his discomforting symptoms? Valium® (diazepam/Roche) begins working within 30 to 90 minutes. Patients continue to improve in just a few days, and relief continues throughout the course of treatment.

There are other important benefits with Valium as well—along with its broad clinical range, Valium has an efficacy/safety profile that few, if any, drugs can match. This record has been achieved with extensive clinical experience, undoubtedly including yours. And, as you must have observed, side effects more serious than drowsiness, fatigue or ataxia rarely occur. Nevertheless, as with any CNS-acting agent, patients should be cautioned about driving, operating hazardous machinery or ingesting alcohol or other CNS-depressant drugs while taking Valium.

Yet another benefit Valium affords is flexibility. Available in 2-mg, 5-mg and 10-mg scored tablets, Valium enables you to titrate dosage to individual patient needs. For the geriatric patient, a starting dosage of 2 to 2½ mg once or twice a day is recommended. And, for patients who forget or skip medication, you can prescribe Valrelease™ (diazepam/Roche) 15-mg slow-release capsules, knowing that Valrelease will assure all the benefits of Valium 5 mg *t.i.d.* with the convenience of once-a-day dosage.

Discontinuation of Valium (or Valrelease) is typically as smooth as its start in short-term therapy. However, Valium and Valrelease should be discontinued gradually after more extended treatment. As you diminish dosage, the built-in tapering action of Valium and Valrelease will help avoid rapidly recurring anxiety symptoms and symptoms of withdrawal, and will help ease the patient's transition to independent coping when therapeutic goals have been achieved.

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For a summary of product information, please turn the page. ROCHE®

Valium® (diazepam/Roche) Ⓝ Tablets
Valrelease™ (diazepam/Roche) Ⓝ slow-release Capsules
Injectable Valium® (diazepam/Roche) Ⓝ

Before prescribing, please consult complete product information, a summary of which follows:

Indications Management of anxiety disorders, or short-term relief of symptoms of anxiety. Anxiety or tension associated with the stress of everyday life usually does not require treatment with an anxiolytic. Symptomatic relief of acute agitation, tremor, impending or acute delirium tremens and hallucinosis due to acute alcohol withdrawal, adjunctively in: relief of skeletal muscle spasm due to reflex spasm to local pathology, spasticity caused by upper motor neuron disorders; athetosis, stiff-man syndrome *Oral forms* may be used adjunctively in convulsive disorders, but not as sole therapy. *Injectable form* may also be used adjunctively in: status epilepticus, severe recurrent seizures, tetanus, anxiety, tension or acute stress reactions prior to endoscopic/surgical procedures, cardioversion.

The effectiveness of diazepam in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies. The physician should periodically reassess the usefulness of the drug for the individual patient.

Contraindications: Tablets or capsules in children under 6 months of age, known hypersensitivity; acute narrow angle glaucoma, may be used in patients with open angle glaucoma who are receiving appropriate therapy

Warnings. As with most CNS-acting drugs, caution against hazardous occupations requiring complete mental alertness (*e g* , operating machinery, driving). Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation, usually limited to extended use and excessive doses Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months After extended therapy, gradually taper dosage Keep addiction-prone individuals (drug addicts or alcoholics) under careful surveillance because of predisposition to habituation/dependence.

> *Usage in Pregnancy*: **Use of minor tranquilizers during first trimester should almost always be avoided because their use is rarely a matter of urgency and because of increased risk of congenital malformations, as suggested in several studies Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

ORAL Advise patients against simultaneous ingestion of alcohol and other CNS depressants

Not of value in treatment of psychotic patients, should not be employed in lieu of appropriate treatment. When using oral forms adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increase in dosage of standard anticonvulsant medication, abrupt withdrawal in such cases may be associated with temporary increase in frequency and/or severity of seizures

INJECTABLE *To reduce the possibility of venous thrombosis, phlebitis, local irritation, swelling and, rarely, vascular impairment when used IV: inject slowly, taking at least one minute for each 5 mg (1 ml) given, do not use small veins, i e , dorsum of hand or wrist, use extreme care to avoid intra-arterial administration or extravasation Do not mix or dilute with other solutions or drugs in syringe or infusion flask If it is not feasible to administer Injectable Valium directly IV, it may be injected slowly through the infusion tubing as close as possible to the vein insertion*

Administer with extreme care to elderly, very ill, those with limited pulmonary reserve because of possibility of apnea and/or cardiac arrest, concomitant use of barbiturates, alcohol or other CNS depressants increases depression with increased risk of apnea, have resuscitative facilities available. When used with narcotic analgesic eliminate or reduce narcotic dosage at least 1 3, administer in small increments Should not be administered to patients in shock, coma, acute alcoholic intoxication with depression of vital signs

Has precipitated tonic status epilepticus in patients treated for petit mal status or petit mal variant status Not recommended for OB use

Efficacy/safety not established in neonates (age 30 days or less), prolonged CNS depression observed In children, give slowly (up to 0 25 mg kg over 3 minutes) to avoid apnea or prolonged somnolence; can be repeated after 15 to 30 minutes If no relief after third administration, appropriate adjunctive therapy is recommended

Precautions. If combined with other psychotropics or anticonvulsants, carefully consider individual pharmacologic effects — particularly with known compounds which may potentiate action of diazepam, *i e* , phenothiazines, narcotics, barbiturates, MAO inhibitors and antidepressants Protective measures indicated in highly anxious patients with accompanying depression who may have suicidal tendencies Observe usual precautions in impaired hepatic function, avoid accumulation in patients with compromised kidney function Limit oral dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation (initially 2 to 2½ mg once or twice daily, increasing gradually as needed and tolerated)

The clearance of diazepam and certain other benzodiazepines can be delayed in association with Tagamet (cimetidine) administration The clinical significance of this is unclear

INJECTABLE Although promptly controlled, seizures may return, readminister if necessary, not recommended for long-term maintenance therapy Laryngospasm/increased cough reflex are possible during peroral endoscopic procedures, use topical anesthetic, have necessary countermeasures available Hypotension or muscular weakness possible, particularly when used with narcotics, barbiturates or alcohol Use lower doses (2 to 5 mg) for elderly/debilitated

Adverse Reactions Side effects most commonly reported were drowsiness, fatigue, ataxia Infrequently encountered were confusion, constipation, depression, diplopia, dysarthria, headache, hypotension, incontinence, jaundice, changes in libido, nausea, changes in salivation, skin rash, slurred speech, tremor, urinary retention, vertigo, blurred vision Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances and stimulation have been reported, should these occur, discontinue drug

Because of isolated reports of neutropenia and jaundice, periodic blood counts liver function tests advisable during long-term therapy. Minor changes in EEG patterns, usually low-voltage fast activity, observed in patients during and after diazepam therapy are of no known significance

INJECTABLE Venous thrombosis/phlebitis at injection site, hypoactivity, syncope, bradycardia, cardiovascular collapse, nystagmus, urticaria, hiccups, neutropenia

In peroral endoscopic procedures, coughing, depressed respiration, dyspnea, hyperventilation, laryngospasm/pain in throat or chest have been reported.

Dosage: Individualize for maximum beneficial effect.

ORAL *Adults*: Anxiety disorders, relief of symptoms of anxiety—Valium (diazepam/Roche) tablets, 2 to 10 mg b.i.d. to q.i d , or 1 or 2 Valrelease capsules (15 30 mg) daily. Acute alcohol withdrawal—tablets, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d or q i d. as needed; or 2 capsules (30 mg) the first 24 hours, then 1 capsule (15 mg) daily as needed Adjunctively in skeletal musc spasm—tablets, 2 to 10 mg t.i.d. or q.i.d., or 1 or 2 capsules (15 to 30 mg) once daily. Adjunctively in convulsive disorders—tablets, 2 to 10 mg b.i.d to q i d ; o 1 or 2 capsules (15 to 30 mg) once daily

Geriatric or debilitated patients Tablets—2 to 2½ mg 1 or 2 times daily initially increasing as needed and tolerated (see Precautions) Capsules—1 capsule (15 mg) daily when 5 mg oral Valium has been determined as the optimal daily dose.

Children. Tablets—1 to 2½ mg t.i.d. or q i.d initially, increasing as needed and tolerated (not for use in children under 6 months). Capsules—1 capsule (15 m daily when 5 mg oral Valium has been determined as the optimal daily dose (for use in children under 6 months)

INJECTABLE Usual initial dose in older children and adults is 2 to 20 mg I.M. or I depending on indication and severity Larger doses may be required in some conditions (tetanus). In acute conditions injection may be repeated within 1 hour, although interval of 3 to 4 hours is usually satisfactory. Lower doses (usually 2 to 5 mg) with slow dosage increase for elderly or debilitated patien and when sedative drugs are added (See Warnings and Adverse Reactions.)

For dosages in infants and children see below: have resuscitative facilities available.

I.M. use by deep injection into the muscle

IV use inject slowly, take at least one minute for each 5 mg (1 ml) given Do not use small veins, i e., dorsum of hand or wrist Use extreme care to avoid intra-arterial administration or extravasation Do not mix or dilute Valium with other solutions or drugs in syringe or infusion flask. If it is not feasible to administer Valium directly IV, it may be injected slowly through the infusion tubing as close as possible to the vein insertion

Moderate anxiety disorders and symptoms of anxiety, 2 to 5 mg I.M. or I.V., and severe anxiety disorders and symptoms of anxiety, 5 to 10 mg I.M or I.V., repe in 3 to 4 hours if necessary; acute alcohol withdrawal, 10 mg I.M or IV initiall then 5 to 10 mg in 3 to 4 hours if necessary. Muscle spasm, in adults, 5 to 10 m I.M or IV initially, then 5 to 10 mg in 3 to 4 hours if necessary (tetanus may require larger doses); in children *administer IV slowly*; for tetanus in infants over 30 days of age, 1 to 2 mg I.M or IV, repeat every 3 to 4 hours if necessar in children 5 years or older, 5 to 10 mg repeated every 3 to 4 hours as neede Respiratory assistance should be available.

Status epilepticus, severe recurrent convulsive seizures (IV route preferred). 5 to 10 mg adult dose administered slowly, repeat at 10- to 15-minute intervals to 30 mg maximum Repeat in 2 to 4 hours if necessary, keeping in mind poss bility of residual active metabolites Use caution in presence of chronic lung disease or unstable cardiovascular status Infants (over 30 days) and children (under 5 years), 0 2 to 0.5 mg slowly every 2 to 5 min , up to 5 mg (IV preferred). Children 5 years plus, 1 mg every 2 to 5 min , up to 10 mg (slow IV preferred), repeat in 2 to 4 hours if needed. EEG monitoring may be helpful

In endoscopic procedures, titrate IV dosage to desired sedative response, ge ally 10 mg or less but up to 20 mg (if narcotics are omitted) immediately pri procedure, if IV cannot be used, 5 to 10 mg I.M approximately 30 minutes p to procedure. As preoperative medication, 10 mg I M , in cardioversion, 5 to 15 mg IV within 5 to 10 minutes prior to procedure Once acute symptomato has been properly controlled with injectable form, patient may be placed on oral form if further treatment is required

Management of Overdosage: Manifestations include somnolence, confusion, coma, diminished reflexes. Monitor respiration, pulse, blood pressure, empl general supportive measures, IV fluids, adequate airway Use levarterenol or metaraminol for hypotension. Dialysis is of limited value

How Supplied:

ORAL Valium scored tablets — 2 mg, white; 5 mg, yellow, 10 mg, blue — bottles 100 and 500, Prescription Paks of 50, available in trays of 10, Tel-E-Dose® pack ages of 100, available in trays of 4 reverse-numbered boxes of 25 and in boxe containing 10 strips of 10

Valrelease (diazepam/Roche) slow-release capsules — 15 mg (yellow and blu bottles of 100, Prescription Paks of 30.

INJECTABLE Ampuls, 2 ml, boxes of 10; Vials, 10 ml, boxes of 1, Tel-E-Ject® (disposable syringes), 2 ml, boxes of 10 Each ml contains 5 mg diazepam, compounded with 40% propylene glycol, 10% ethyl alcohol, 5% sodium benzoat and benzoic acid as buffers, and 1 5% benzyl alcohol as preservative

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References: 1. Kales A *et al: J Clin Pharmacol 17*:207-213, Apr 1977 and data on file, Hoffmann-La Roche Inc., Nutley, NJ. **2.** Kales A: Data on file, Hoffmann-La Roche Inc., Nutley, NJ. **3.** Zimmerman AM: *Curr Ther Res 13*:18-22, Jan 1971. **4.** Kales A *et al: JAMA 241*:1692-1695, Apr 20, 1979. **5.** Kales A, Scharf MB, Kales JD: *Science 201*:1039-1041, Sep 15, 1978. **6.** Kales A *et al: Clin Pharmacol Ther 19*:576-583, May 1976. **7.** Kales A, Kales JD: *Pharmacol Physicians 4*:1-6, Sep 1970. **8.** Frost JD Jr, DeLucchi MR: *J Am Geriatr Soc 27*:541-546, Dec 1979. **9.** Dement WC *et al: Behav Med 5*:25-31, Oct 1978. **10.** Vogel GW: Data on file, Hoffmann-La Roche Inc., Nutley, NJ. **11.** Karacan I, Williams RL, Smith JR: The sleep laboratory in the investigation of sleep and sleep disturbances. Scientific exhibit at the 124th annual meeting of the American Psychiatric Association, Washington, DC, May 3-7, 1971. **12.** Pollak CP, McGregor PA, Weitzman ED: The effects of flurazepam on daytime sleep after acute sleep-wake cycle reversal. Presented at the 15th annual meeting of the Association for Psychophysiological Study of Sleep, Edinburgh, Scotland, June 30-July 4, 1975. **13.** Data on file, Hoffmann-La Roche Inc., Nutley, NJ.

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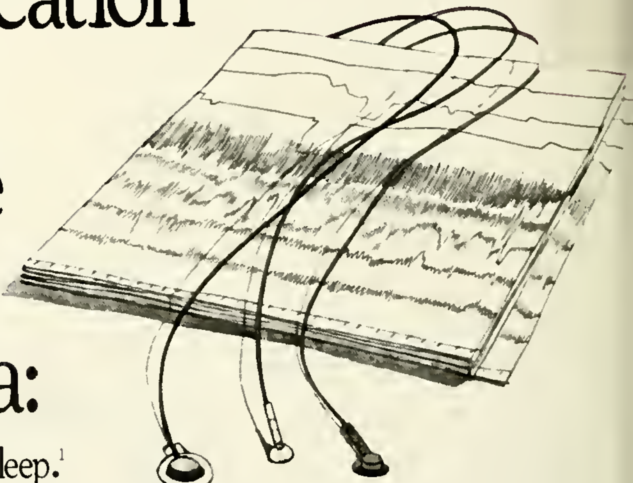

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Joseph Ward Hooper Lecture

"It Was the Best of Times. It Was the Worst of Times" — page 701
by Edward R. Annis, M.D.

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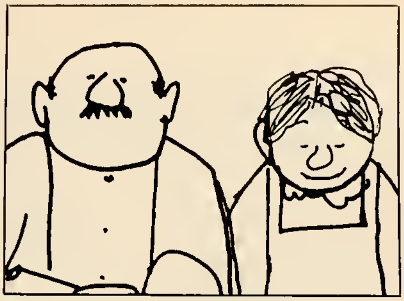

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EDITORIAL

A Cost Perspective on a Case Report

Eugene W. Linfors, M.D.

THE case report of Drs. Lentz, Fayez and Alsuleiman in this issue of the *Journal* nicely illustrates the hypothalamic dysfunction and isolated gonadotropin deficiency in two female patients with Kallmann's syndrome. They have done this through extensive testing including history, physical exam, estrogen and progesterone induced withdrawal bleeding; measurement of gonadotropins and prolactin; karyotyping; gonadal visualization and ovarian biopsy by laparoscope with subsequent histological and chromosomal analysis of the ovary; and careful (q 15 minute) analysis of the hormonal response to gonadotropin and thyrotropin releasing factors. Since the authors' goal is to extend our knowledge of the pathophysiology of a condition and to write a scientific report, this kind of extensive testing is warranted. How about the busy clinician reading the *Journal?* Is he to understand that this extensive evaluation is appropriate for *every* patient with primary amenorrhea?

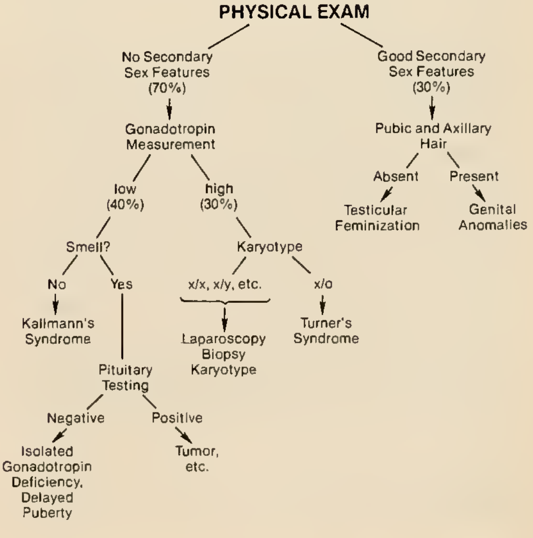
The authors did not intend to write a review of the cost-effectiveness of various strategies for evaluating primary amenorrhea and neither do I. However, a brief analysis of the charges for the assays and procedures noted in this report does illustrate the value — in concrete, financial terms — of a logical sequence rather than a "shotgun" approach to this clinical problem. Using commercial laboratory prices for the assays and local charges for the surgery and biopsy, and excluding the analysis of pituitary response to gonadotropin and thyrotropin releasing factors, I calculate the cost of a complete workup (buccal smear, karyotyping, gonadal visualization and biopsy by laparoscopy and pituitary testing) to be about $2175. Using these estimates, the indiscriminate, "complete" workup of 100 patients with primary amenorrhea would generate aggregate charges of $217,500.

We are told by Drs. Lentz, Fayez and Alsuleiman that, in addition to having primary amenorrhea at age 20, both of their patients were nulliparous, had poor secondary sexual characteristics including short stature, poor breast development and scant pubic hair but an otherwise normal physical exam — specifically no stigmata of Turner's syndrome (skeletal anomalies; short, webbed neck). Neither could smell coffee or perfume. Serum gonadotropins were low. At this point and after having invested $150.00 in laboratory tests, one could safely conclude that the two patients had hypogonadotropic hypogonadism with anosmia — Kallmann's syndrome. Further diagnostic testing would make one no more sure of the diagnosis but would substantially escalate the costs.

Putting this in perspective, recall that careful attention during history taking and physical exam to the absence or presence and progression of secondary sexual characteristics often establishes the correct diagnosis in cases of primary amenorrhea. (See figure.) Patients with well developed secondary sexual characteristics who have never menstruated probably have some form of Müllerian dysgenesis or congenital anomalies of the genitourinary tract. These include imperforate hymen, obliteration of the vaginal orifice, imperfect continuity of the vaginal canal, absent uterus or uterine cavity or endometrium. Complications include hematocolpos, hematometrium or hematoperitoneum. The findings can be confirmed on pelvic exam and no further testing is usually required. Referral can be made to a gynecologist for further radiologic evaluation and surgical therapy. These anomalies account for 25-30% of women with primary amenorrhea.

Patients with well developed breasts but with scant or absent pubic and axillary hair, with or without inguinal hernias or masses (inguinal testes) and with a blind vaginal canal, probably have testicular feminization syndrome. Serum testosterone would be high confirming the diagnosis. Baseline gonadotropin levels would be interesting but not essential for confirming this diagnosis.

When the physical exam shows absent secondary sexual characteristics, gonadotropin measurement is indicated. Basal gonadotropins ($75) can either be high or low. In 30% of primarily amenorrheic patients they are high and



From the Department of Medicine, Division of General Internal Medicine, P.O. Box 3381, Duke University Medical Center, Durham 27710.

karyotyping ($600) is needed. Approximately half of this group has Turner's syndrome (karyotype x/o) and no further workup is essential to the diagnosis. Most of the other half have genetic mosaicism (karyotype x/x,x/y) or pure gonadal dysgenesis (x/y); this group requires laparoscopy, ovarian biopsy and ovarian karyotype ($825).

If the gonadotropins are low (40% of patients), then testing for ability to smell will separate patients with Kallmann's syndrome (can't smell) from those who require further pituitary evaluation (can smell). Those who can't smell and who have no other obvious cause for absent smell require no further testing for diagnosis. In the remainder, pituitary evaluation (head CT, visual field exam, gonadotropin, TSH and prolactin assay = $1500) will separate patients with tumor from those with isolated gonadotropin deficiency or delayed puberty.

As noted above, indiscriminate testing would cost at least $217,500 to evaluate 100 hypothetical patients with primary amenorrhea. If, instead, one follows a careful, sequential approach which uses laboratory studies only when and where indicated, the aggregate cost of evaluating the same 100 patients is less than $100,000 — a savings of more than half! To recapitulate my message: it is a pleasure to read a well documented case report such as the present one, but we must be careful not to misapply the authors' message to our own practices. The authors' intent is often very different from ours as busy practicing clinicians — to document and elucidate pathophysiology rather than to diagnose and treat. The authors did a nice job at what they set out to do but it is our job to put the information into the perspective of our own practices if we are to keep the cost of medicine from rising out of sight.

EDITORIAL

Home Care of the Stroke Patient — A Viable Alternative to Hospitalization?

Albert Heyman, M.D.

DESPITE the progressive decline in the incidence of stroke in this country during the past decade, this illness remains one of the major causes of disability and death, particularly in population groups over 65 years of age. The direct hospital cost of providing acute care for patients with stroke has been escalating markedly in the past few years, not only because of inflation but also because of the availability of new sophisticated diagnostic and therapeutic procedures. At the same time, the proportion of stroke patients gaining access to hospital has been increasing as a result of the greater use of medical insurance, Medicare and Medicaid. Although precise figures on the current cost of hospitalization for stroke in the United States are not available, it is estimated, on the basis of data reported in 1976, that the annual hospital expenditure for acute care of this illness may approach 2 billion dollars.[1] At Duke Medical Center, the average period of hospitalization during 1982 for patients with primary diagnoses of cerebral infarction was 17.4 days. The estimated hospital bill for each patient (few of whom had surgical treatment) was calculated to be about $6,500, excluding the cost of attending physicians and consultants.

This heavy financial burden on families and on national medical resources for acute stroke care alone has prompted re-evaluation of the need to hospitalize every stroke patient. The alternative, i.e., home care for some patients, should now be carefully considered by physicians.

It is obvious that hospital admission is required for patients with certain types of acute stroke. For example, patients suspected of having subarachnoid bleeding or intracerebral hemorrhage should always be hospitalized. In addition, stroke patients with decreased consciousness and those unable to swallow or take oral nourishment will require the intensive nursing care which is best carried out in a hospital. Patients with progressive (evolving) stroke, those with recurrent focal transient cerebral ischemia and those suspected of having cerebral emboli should also be admitted to the hospital for special diagnostic and therapeutic procedures to prevent subsequent morbidity and mortality. These particular types of cerebrovascular disease, however, probably represent less than half of all strokes in persons 65 years of age or older, seen by the general physician or internist. The focus of this paper is primarily concerned with patients in whom cerebral infarction is caused by atherosclerotic vascular disease. Our experience has been that many such patients can be adequately cared for at home provided, of course, that satisfactory family support and adequate facilities are available.

The following case, recently brought to our attention, represents a typical problem faced by the family and physician in making a choice between the need for hospitalization or home care: A 64-year-old retired security guard had been treated for several years with antihypertensive medication and oral hypoglycemic agents for moderate

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hypertension and diabetes. While shopping one week-end, he was observed by his wife to have sudden onset of impaired speech. There was no loss of consciousness, overt paralysis or evidence of visual loss. During the next two days, the patient remained aphasic but was able to comprehend simple conversation and questions. When seen by his physician on Monday morning, the patient was found to have a blood pressure level of 155/95 mm Hg and a fasting blood sugar of 110 mg%. There was slight weakness of the right arm and face and moderately severe non-fluent aphasia. A systolic bruit was heard over the left internal carotid artery high in the neck. The patient was able to walk about, feed and dress himself and had normal control of bowel and bladder function. Hospitalization was not thought to be necessary at that time and the patient was advised to remain at rest for the next several days.

During the following week his condition remained essentially unchanged. He continued to have comprehension for simple conversation but there was no improvement in his language ability. He became increasingly withdrawn and uncommunicative. There was considerable anxiety on the part of the family in regard to his frequent crying spells and frustration at trying to make himself understood. The patient's spouse, family and friends were able to take care of him at home but became increasingly concerned over the lack of improvement. For this reason, a neurologic consultation was requested at Duke Hospital.

It was the consultant's opinion that the patient had suffered a small infarct in the left frontal lobe of the brain involving speech and language function as well as the motor area of the face and arm. The presence of a left carotid bruit suggested the presence of an obstructive or ulcerative lesion in this vessel. The fact that the patient's dysphasia had not improved significantly in the two weeks following the onset of the stroke indicated that considerable speech deficit would remain.

Patients such as this are frequently seen in neurologic practice and the following questions arise:

Would the patient have benefited from immediate hospitalization? Would early in-patient treatment have improved the eventual outcome of the illness?

There is little doubt that in laboratory animals, prompt improvement in collateral blood flow following experimental occlusion of a major cerebral artery will reduce the extent of cerebral infarction. In man, however, attempts to increase collateral circulation in acute cerebral ischemia by vasodilator or hypertensive agents or by anticoagulants have been disappointing. However, recent publications on the use of hypervolemic hemodilution therapy in patients with early cerebral infarction concluded that this form of treatment may have beneficial effects.[2, 3] The reduction of blood viscosity by administration of low molecular weight dextran, with or without venesection, is thought to improve collateral blood flow in acute ischemia and thus impede cerebral infarction. The initial results of such therapy are encouraging but much more research is needed.

Other recent reports have indicated that the use of naloxone, an antagonist of endogenous opiates, may restore neurologic function in some forms of stroke.[4] Although subsequent studies of this agent have not been convincing, more extensive studies are now being planned to determine whether naloxone has, indeed, beneficial clinical effects in acute stroke. Despite these encouraging reports of new therapeutic approaches to the treatment of stroke, there is at the present time no effective treatment for restoring neurologic function in patients with cerebral infarction. The need for immediate hospitalization for this purpose is uncertain.

There is experimental evidence to suggest that high levels of blood glucose may have an unfavorable effect on recovery from cerebral infarction. For this reason it is recommended that efforts be made to maintain normoglycemia in diabetics with acute stroke. Monitoring of blood sugar levels could, however, be carried out at home.

Should elderly patients with completed stroke caused by cerebral thrombosis be referred for diagnostic procedures, e.g., CT scan, electroencephalogram, lumbar puncture or invasive or noninvasive studies of the cerebral circulation?

In this particular patient, the presence of hypertension, diabetes mellitus and carotid bruit all indicated the likelihood of atherosclerotic vascular disease. The history of sudden onset of focal neurologic dysfunction without headache or loss of consciousness was evidence for the development of cerebral infarction. A diagnosis of cerebral hemorrhage or subarachnoid bleeding, brain tumor or subdural hematoma would be extremely unlikely in this clinical setting. Certainly there was no indication for lumbar puncture or electroencephalogram. Computed tomographic examination of the brain would not be likely to reveal a small infarct in this early stage of the illness. Non-invasive studies (oculoplethysmography, ultrasonic arterial imaging, etc.) or digital subtraction angiography would probably show a lesion in the cervical portion of the left internal carotid artery but endarterectomy should not be carried out in the acute stroke. For this reason, there is no justification for the expense and stress associated with these diagnostic procedures.

What follow-up studies or treatment would be useful?

Speech therapy is the only rehabilitative treatment indicated for this patient. Such treatment is often useful for patients who are frustrated and depressed as a result of poor communication and may accelerate the return of language function.

Once recovery or improvement of speech is obtained, attention should then be given to the possibility of preventing a recurrence of the stroke. Approximately two or three months after the onset of the infarction, the need for intravenous digital subtraction angiography should be considered to determine whether a surgically treatable lesion is present in the left internal carotid artery. Noninvasive studies of the extracranial arterial circulation are also recommended. Whether the use of aspirin in such patients will prevent transient cerebral ischemia or recurrent stroke is not certain but recent reports suggest that such treatment is of value.[5]

Could this patient's illness have been prevented?

The answer to this question is, of course, highly problematic. There is no doubt that adequate treatment of hypertension does indeed prevent stroke in a significant number of patients. Rigid control of diabetes is also believed to reduce the likelihood of atherosclerotic vascular disease.

In summary, home care for selected patients with cerebral infarction seems to be a reasonable option. The criteria for this decision should include good family support and the availability of visiting nurses or physical therapists when needed. If the patient's clinical course does not progress satisfactorily, neurological consultation and CT examination should be obtained to confirm the diagnosis. Planning for stroke patients must consider the total costs for managing this illness. The expenditure of large sums for immediate in-hospital care may deprive the family of the resources needed for long-term restorative care.

Postscript

After this editorial was submitted to the *Journal*, additional followup information was obtained on the patient described above. During his convalescence at home, the patient's mental condition deteriorated with worsening of his withdrawal symptoms and occasional confusion and irrational behavior. The neurologic manifestations, however, remained unchanged. The patient's family became unable to take care of these new problems and he was admitted first to his local hospital and later to a university hospital. The CT scan, EEG, spinal fluid examination and other laboratory studies were all normal. A diagnosis was made of severe organic depression and treatment with antidepressant medication was begun.

It would appear that this patient suffered a major post-stroke depression — a complication reported to occur in about 60% of strokes with lesions in the anterior portion of the left cerebral hemisphere. Whether the depression would have been recognized and promptly treated during hospitalization early in the course of the stroke is, of course, unknown. Some physicians believe that, with rare exceptions, all patients with cerebral infarction must be admitted to the hospital as emergencies.[6] Such a blanket judgment is, of course, extreme and leads to unnecessary costs. Each physician must make a decision based on the findings of the individual patient.

Our specific medical criteria for hospitalization of strokes has been outlined above. A recent article on this subject in *Lancet*[7] has suggested the following general guidelines for admission of patients with cerebral infarction: (1) when the diagnosis is in doubt, (2) when adequate nursing care cannot be given at home, (3) when active therapeutic intervention is possible, (4) when the underlying cause needs investigation. The latter two conditions are considered to be uncommon and, in many instances, hospitalization of stroke in England has been for social reasons.

There is an obvious need to reduce the escalating cost of hospitalization for stroke. It is equally clear that the choice of home vs. hospital care may be very difficult. Nevertheless, physicians must begin to reconsider the justification for routine hospital admission for all stroke patients.

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SPECIAL ARTICLE

Joseph Ward Hooper Lecture: "It Was the Best of Times. It Was the Worst of Times."

Edward R. Annis, M.D.

As a physician it is not difficult to begin this Joseph Ward Hooper Lecture with a quotation of the words which began Charles Dickens' *Tale of Two Cities:* "It was the best of times. It was the worst of times."

Two decades have passed since our government's intrusion into the education of our doctors, the practice of medicine, and the hospitalization of our nation's sick and injured.

Starting in the 1930s and 1940s with our ability to control infections, we have experienced rapidly advancing evolutionary forces which have produced dramatic and substantial changes in the diagnostic and therapeutic capabilities of American doctors. Coincident with and paralleling these at times remarkable achievements has developed a social and aggressive political climate stimulating and nourishing demands for more and better care for all of our nation's people.

In the early 1960s, then President Lyndon Johnson stated that there were at least 50,000 too few doctors in the United States and Congress responded by mandating the expansion of medical schools. Under that stimulation, which ignored the forces of the marketplace that conformed to normal growth, we have doubled our capacity to educate physicians. In 1965 there were 8,757 new students entering medical schools, whereas in 1980 there were in excess of 17,000.

This year roughly 24,000 graduates of medical schools in this and other countries competed for approximately 18,000 places to continue their education as residents. There were 6,000 young people with no place available for resident education. Too many of these are products of diploma mills in the Caribbean and elsewhere where they have been trained inadequately with little or no clinical background. Accentuating the problem are relentless political pressures to allow them to practice however deficient their education.

With casual disregard of the Congressional role in producing the alleged "doctor glut," political leaders now declare "there are too many doctors."

The Hill Burton Act and other Congressional actions encouraged and gave substantial Federal financial contributions to refurbish and upgrade existing hospitals and to construct new facilities for the care of the sick. Now similar forces, faced with steadily increasing costs, declare "there are too many hospitals"; "there are too many scientific and technological tools."

Claiming health care to be a "human right," and under the banner of the Great Society, Medicare was enacted in 1965 and Medicaid in 1966. These legislative enactments represented Congressional commitment to bring medical care for all the elderly (rich and poor) and to bring the poor of all ages into the mainstream of our health care system. The promises made were for high quality and available medical care for all. Hospitals were to be paid on a cost-plus basis and medical professionals were to be reimbursed on a usual, customary and reasonable fee basis. Medicare, politically projected by its proponents to cost between six and seven billion dollars by 1985, cost nine times that much in 1981.

In 1972, with minimal input from the medical profession, Congress saw fit, irrespective of their financial status, to place under Medicare all sufferers from one malady, namely, end-stage renal disease. End-stage renal disease, projected by Congress to reach a cost peak of $250 to $300 million, now approaches a cost of two billion dollars per year.

Repeatedly, the advice and input from an experienced medical profession was ignored. The expansion of medical schools and hospitals, the promise of health care for all the elderly and all those afflicted with one disease — the rich as well as the poor — were dictated by a politically motivated Congress of non-medical, mostly non-scientific people. However noble their intentions the resultant cost escalations were inevitable in a nation with an ever increasing population among whom the elderly comprised a steadily growing segment.

The medical profession cautioned the Congress against promising too much to too many. We asked: Why should working people be taxed on their wages to provide health care for all who are over 65 or all who suffer from a single disease?

At that time, and it is true today, some of the richest people in America were over the age of 65. Others among the wealthy are recipients of government payments for dialysis or kidney transplants.

Our advice was to encourage the use of private health insurance for most workers and for those able to provide for themselves, leaving to government only the responsibility to finance medical and health care for those unable to

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provide it for themselves and for their families.

Another paradox: our government approves legal abortion in excess of a million of potentially normal babies every year. This same government by recent action mandated that every newborn must be nourished and sustained by modern medical care irrespective of the extent of mental and/or physical deformity. You and I have observed anencephalics, born without a brain, and other severe congenital anomalies with no hope of ultimate survival. Historically such difficult decisions have been made by parents, families and their doctors, and not by Washington bureaucrats.

Despite repeated failures of bureaucratically sponsored and Congressionally approved programs, and irrespective of uncontrolled cost increases, there are still those in Congress who feel that only legislators can regulate and control hospitals and doctors with their associated problems, most of which they know little or nothing about.

Medicare, Medicaid, regional medical programs, health systems agencies, Certificate of Need, PSROs, federally financed HMOs and now Preferred Provider Organizations and Diagnostic Related Groupings attest to the inability of the Congress to deal effectively and prudently with the multifaceted problems of providing health care to an expanding and heterogeneous population.

Time restraints deny in-depth discussion of another development, namely, the growing involvement of corporate enterprise in the provision of health care. In my opinion, there is nothing wrong, *per se*, with corporate enterprise as long as medical decisions remain unrestricted with qualified medical professionals. I have long felt that medical care should operate like any other business, legitimately for profit, while never forgetting our professional, ethical and moral obligations to see that no one is denied necessary medical care because of inability to pay. However, as a profession, we must be concerned and involved when 15% of all of our hospitals, and roughly 80% of nursing homes and dialysis centers are controlled by corporations structured for profit.

I was told of a seminar for hospital administrators which took place at Yale University a couple of years ago. Allegedly one half-day was devoted to the subject of how to control doctors! Major emphasis was reported on the growing pool of well-trained graduates from top quality residencies. It was emphasized that many were or would be in debt and that employment opportunities offering regular hours, in-depth professional backup, adequate income for debt retirement and other fringe benefits would create an acceptable and comfortable climate and assure a controllable medical staff.

Up until now I have concentrated on many of the contributing factors creating the worst of times for our profession. But, however difficult and many, the problems can be obviated if we recognize and contribute to the existing potential for the best of times.

To be assured of the best of times we had better establish an on-going rapport with our patients. Why our patients? Because collectively we see over two million patients a day and they are the voters — the people who ultimately determine our leaders and our direction. Senator Orrin Hatch of Utah opined what I believe to be true, namely: "If doctors would just talk to their patients, they could rule the world."

What should we talk to them about? We should talk about the record of American medicine and the why of its costs. We should emphasize those areas of cost increases over which we have no control. We should ask them what they want us to do.

Back in the sixties, political leaders said that we want medical care of a single standard of quality and available to everybody in this nation. Our physicians responded in noble fashion. No longer is major criticism directed toward either the quality or the availability of medical care. Today our critics say they know that it is good but that it costs too much.

An oft-repeated statement is that medical costs have doubled during the past decade. Of course they have, but why?

Every quoted major economist in this nation had admitted that 50% of the increase in costs since the intrusion of government in the '60s is due to the same inflation that afflicts the nation. While medical costs doubled, entitlement programs multiplied 4½ times. In 1972 those programs amounted to $88.7 billion; 10 years later they had multiplied to more than $375 billion.

In 1972, the interest on the national debt was $19.7 billion; this year it will exceed $100 billion — a five-fold increase in less than 10 years — and affecting medical care just as it has the rest of the economy.

Repeated studies, extensively in New York but duplicated elsewhere, have shown that 25% of the increase in health care costs results from government regulations that in no way enhance the quality or availability of medical care.

Put those two factors together, government-induced inflation and government regulations, and they comprise 75% of the increase in costs for which we are blamed, but over which we have no control.

What about the other 25%? I believe that here we have much to be proud of, and so will our patients once they understand. First is a population which increases in excess of two million persons per year. These are the increases in births over deaths and a steady legal immigration. A two-million increase per year will of necessity cost more in the aggregate, not to mention the estimated seven to nine million illegals who also are frequent recipients of medical care.

A second positive factor, despite the costs, is space age technology. Over one-half of the effective diagnostic and therapeutic tools available for use today did not exist 10 years ago.

People hear who were deaf.
People see who were destined to be blind.
People walk who were bedridden.
People live who used to die.

A third sector of the 25% increase in costs that are defendable is the care given to the elderly. Those over the age of 65 comprise 11% of the population, but they consume over one-third of all dollars spent for medical and health care.

Our population generally is unaware of our government's failure to meet its self-imposed obligations under

Medicare. The government has failed to live up to its promise to pay most of the medical and health care costs for all over 65 years of age. Doctors and hospitals are paid by percentiles established by the bureaucracy and receive amounts varying from 50% to 65% of true costs. The balances are shifted onto the private sector as a hidden tax, a sick tax to be absorbed by employers in increased insurance for employees and by the rest of the self-insured public.

This is a good time to ask: why doesn't the government pay its just bills to doctors and hospitals? They pay their bills to everyone else.

They buy tanks, guns, airplanes, ships, build roads and buildings and everyone is paid. This morning on television I saw a demonstration of a new tank capable of 40 miles per hour and great maneuverability. They reported that the average cost of overruns was from a half million to two million dollars per tank. But everybody is paid.

The most recently completed third Senate Office Building in Washington was projected to cost $47 million, but ended up costing $137 million with an additional $8 million for furnishings. But everybody will be paid: architects, engineers, suppliers of steel, concrete, etc. All will be paid in routine fashion. Why don't they pay their just medical and hospital bills?

Another area in need of clarification to our patients is the numbers game. The criticism, "Health costs have reached 9½% and may soon reach 10% of the gross national product!" How much should they be? Is it not reasonable to ask: should they not be whatever percentage is required to see that no one in the nation is denied necessary medical and hospital care?

According to government, in 1979 17.5% of the gross national product was spent on sports and recreation. Now you and I know that sports and recreation are great contributors to good health, good preventive medicine, but why is 17.5% totally acceptable for sports and recreation while 9.5% is decried for the total health care of our people?

In 1980, transportation costs consumed 20% of the gross national product. It is not necessary to low-rate the value of moving things and people from one place to another — transportation — to raise the question as to whether or not we can justify half as much in dollars for the doctors, hospitals, nursing homes, drugs, technical tools, etc. required to meet the health needs for all of our people.

These are questions we should pose as we seek public understanding and support for the pursuit of the best of times. Records show that the greatest amount of money for health and medical care is expended at the two extremes of life — the young and the elderly. Last year was the 20th year in a row that we lowered the infant mortality rate, as neonatologists saved the lives of more and more prematures, admittedly with associated high costs. Ask the women of America, the mothers, the grandmothers, the women's clubs if next year, because of new knowledge, new tools, new technology, we can make a new record and save even more babies at greater cost — should we do it?

And at the other extreme — the elderly — we should ask the same question. Should we continue our efforts to make people live longer to enjoy a better life? You know what the answer will be when we ask our patients, the American people, the voters of this great nation.

Another misconception, kept alive by some politicians, many bureaucrats and a liberal media, is an attitude that money spent on health care is lost, is wasted, is money down the drain. We read in business publications that as a nation we are getting away from an industrial to a service society. Much space is given to the new jobs being created by communications, by computers and by entertainment vehicles like Atari and Colecovision.

Why are jobs to build video games, computers, automobiles, or widgets more important than jobs for people to care for the sick and the injured? How important is new technology to make people live longer and better and the jobs created by training men and women to use that technology?

It varies with different hospitals, depending upon their capabilities, but from 55% to 65% of hospital costs go for the men and women who provide their services. Hospitals are labor intensive, they operate 24 hours a day, 365 days a year, and their employees' wages are spent like anyone else's wages as a steady and substantial contribution to the economic stability of any area.

As we envision with our patients the potential for the best of times, we should ask and answer a question, namely: where does most of the money go?

Statistics show that the leading cause of death in this country is cardiovascular disease. We have made great progress in this field, and each of the past 12 years in a row has seen a consistent lowering of the death rate from heart attacks and strokes. Some of this progress is because of both medical and surgical advances, but a portion of the success is the result of a better educated, motivated public willing to listen to their doctors, to take off excess weight, to take their medications regularly, and to avoid excesses such as tobacco and alcohol.

But cardiovascular disease is not the number one drain on the health care dollar, which is cancer. Though we see it in the newborn, we see it in the young, and often in the middle-aged, this is primarily a disease of later life. One of the reasons that the senior citizens of this nation consume so much more of the health care dollar is that when they do have their cancers, or their heart attacks, or their strokes, it is in association with high blood pressure, kidney disease, diabetes, arthritis and many of the other problems frequently seen in advancing years.

A recent Harvard Health Care Letter indicated that from 30% to 35% of all cancers with which we deal could be eliminated if we could eliminate just one product, namely, tobacco. Tobacco has been repeatedly indicated as a major cause of cancer of the tongue, of the floor of the mouth, the trachea, the esophagus, the lungs, and bladder. The abuse of tobacco is undoubtedly the greatest contributor to preventable disease with which we deal, but we deal with people, who are human, and when trouble develops irrespective of cause our job is to do everything we can in their behalf.

Next to cancer as a continuous drain on health care dollars is accidents. Accidents in the home, accidents on the farm, accidents on the highways.

A few weeks ago some mentally disturbed individual killed seven people with cyanide in Tylenol capsules. The media were alarmed, and press, radio and television led off the news with repetitive reports of the tragedy. The people responded and the nation was upset. Pressure was such that even the Congress moved in uncharacteristic speed to demand tamper-resistant containers for medication. Seven people died. Tragic, of course, but during that same week 900 people were killed on the nation's highways and 66,000 people were admitted to the hospital as a result of automobile accidents. These figures duplicated the figures of the week before and what would follow the week after. Many of the 66,000 who were put in hospitals the previous week or month were still there, demanding the multiple skills of every field of medicine and surgery.

We revere Dr. Howard Rusk for his great contributions toward rehabilitation of the injured. The record shows that year after year we add to the number needing rehabilitation at the rate of 10,000 young people between the ages of 18 and 35 who become paraplegics or quadriplegics as a result primarily of automobile accidents, though some come because of gunshot wounds and diving accidents. Ten thousand! They will be an added drain on dollars as doctors and hospitals must care for them as long as they live. This is especially true as we add more and more to our knowledge of rehabilitation and technology to maximize what is left of their potential for life and living.

Doctors treat more than two million burns a year, roughly a million of them in children, and most of those occur in their own homes. Burns are among the most serious, the most extensive, and the most expensive of all medical and surgical treatments.

Two or three years ago, I believe it was in Virginia, a medical center made a survey of how many people who had gunshot wounds ever paid their bills and what was the average cost. The average cost was $50,000 and only 5% on an average ever paid their bills. I love to tell this one in South Florida because in 1981, I believe it was on May 13, in one day at Jackson Memorial Hospital associated with our university they treated 20 gunshot wounds. Our percentages are much like those in Virginia, so that it is easy to calculate the cost of that one day's havoc to be in excess of a million dollars.

One thing is certain: when people come to a hospital they have a common language and a common request: "Doctor, do everything you can and spare no expense."

Slightly more than a year ago we viewed on television when a president and three members of his entourage were shot in Washington, D.C. Four people taken to two hospitals. Who took care of them? The residents on call, the nurses on call, doctors on call. The President needed 10 or 12 units of blood and that is what he received. But you and I know that had they been four derelicts taken to the same two hospitals at the same time, they would have been cared for by the same residents on call, the same nurses on call, the same physicians. And if one of them had needed 10 or 12 units of blood, that is exactly how many he would have gotten. This is because we are doctors and we treat people one at a time, and when they arrive at our emergency rooms we see to it that they get all the care they need, when they need it, as long as they need it, whether they can pay for it or not. One of the questions we should ask our patients and the American people is: do you want us to change and do anything less than the best of which we are capable?

A common complaint is the rate at which health insurance rates continue to rise. Perhaps it is time for us to ask people to review the principle of insurance. Homeowners insure their homes against fires, hurricanes, floods and perhaps earthquakes in California. People know that in any given year a certain number of homes will be partially or completely destroyed by fire or other calamity and by pooling their resources they can cover the losses of those who are so unfortunate. This kind of homeowner's insurance, however, does not cover the needs for a plumber, electrician, a painter, or the replacement of a leaky roof. I am sure that insurance could be written to cover all these contingencies, but the cost would be horrendous.

Another example: automobile insurance. Most of us purchase this to protect ourselves against possible injury to someone's person or property. The insurance is designed to provide for that relatively small number among millions of drivers who are insured, but when there is a need for new tires or a new battery, or repairs on the air conditioning, the insurance doesn't cover it.

Government has urged employers to be generous in providing health insurance for their employees by making such fringe benefits tax deductible to management and not taxed to the employee. Labor-management negotiators have taken advantage of this indirect government subsidy and many of our major industries provide first dollar coverage for doctor or hospital care.

This year General Motors, Ford, and then Chrysler had to back down on their demands that employees share some of the costs by deductibles and co-payment.

One of our jobs is to reeducate our patients to provide for the ordinary wear and tear of living, the cuts, the bruises, the minor injuries, and routine checkups, leaving to insurance that for which insurance was originally designed — for the accident, the heart attack, the stroke, the tumor, the cancer. The great health insurance industry has demonstrated its capability to provide for such reasonable uses of the mechanism of insurance.

We have a lot of educating to do, not only directly with our own patients but also with the growing number of business coalitions forming in state after state to deal with the problems attendant to ever increasing health care costs. I have found that business men are willing to talk and to listen. In general they want to continue to see that quality medical care is provided to their employees and they are willing to pay reasonable fees for quality work.

One of our biggest jobs is to remind people and their elected leaders that in a nation that continues to grow and expand in numbers, in a nation where those numbers are living longer and better, and in a nation that continues to stimulate many minds to contribute ever better tools to do an ever better job, it will continue to cost more money in the future than it has in the past. It may easily pass 9½% or 10% or 11% or 12% of the gross national product, but when we remind them of the quality of the product and the extent of demands for that product, I believe they will continue to support their doctor's desire to provide the best of care for those in need.

This is not the time to dwell on those areas of excessive use of laboratory and hospital facilities, many of which have been accentuated because of the increase in alleged malpractice. The voluntary effort highlighted many things that doctors can do, hospitals can do, and patients themselves can do to contribute to quality medical care in a cost effective manner. But what if we are unsuccessful in getting our story told? If we don't get this message to the American people, if we don't remind them that we have the capability of making medical care tomorrow even better than it is today, if we don't remind them that it will cost more because of new discoveries and new technologies, they may be led by misguided legislators and others to accept mandated laws for cost containment.

In our democratic society if such legal mandates take place, we will have to abide by them and we can do it. We have prototypes already existing. The first way we can do it is by denying care, a procedure proving to be cost-effective in that it saves money, as demonstrated by the 35-year old British medical experiment. In Britain today, under the National Health Service, if you are over the age of 55 no longer will you be admitted for dialysis or kidney transplant. That age cutoff date was ruled by the National Health Service in the interest of economy.

In both Britain and Sweden today, if you are over the age of, I believe it is 67, and have a heart attack, no longer are you admitted to a cardiac care unit. Oh, they will treat you in a conventional manner, but you won't be given either the medical or surgical approach that is making such remarkable strides in prolonging and adding to the enjoyment of life for those suffering from heart disease. Both the British and Swedish actions have demonstrated that a nation can save money by denying care on the basis of income or age or some other reason.

The second way that we can save money is by delaying care. Here again we can look to our British cousins and learn from their experience. A few weeks ago *The Wall Street Journal* gave anecdotal reports on the British National Health System. They quoted one woman who had waited four or five years to finally have her needed hip replacement. They quoted another woman who had a similar four-year wait for an admittedly needed procedure. Waits of one to four or five years are not uncommon and, as reported by *The Wall Street Journal*, the number on that waiting list in early June was 785,000 people.

Of course, Britons can go to BUPA — that's the British United Provident Association, financed by insurance and providing more immediate care for those willing to pay. BUPA has built some 28 hospitals and is now providing private care for some five to six million Britons who recognize that, to get the kind and quality of medical care available today, they must be willing to pay for it, and through BUPA they obtain it in the private sector.

It is important that we emphasize that legislative actions to force an arbitrary limit on costs can be responded to only by denying care to some, by delaying care to many, or by giving less than the best of care to most.

And so, if we would continue contributing to the best of times, it is important that we emphasize to the men and women of America that the medical profession has responded to the challenge of government, in spite of its many problems because of regulation and over-regulation, and has provided for the people of this nation a quality of medical care that is preeminent in the world. We must emphasize that we want to continue to provide this quality of care to all who need it, to the extent of their needs, but in order to do so, it will require more people, not less; more trained people, more to develop new tools, more to be educated to use these tools; that will mean more jobs, more people working, more people contributing positively in a service economy.

I am convinced that the American people will want the medical profession to continue in the future to blaze trails as remarkable as they have in the recent past.

The public will make wise decisions if they know the facts. Who knows them better than we do?

I consider that that is our job: to tell the true story and, if we do, oh we'll have problems to deal with, but we will also deal with them as we have with so many other problems in the past, and the future will be brighter than ever.

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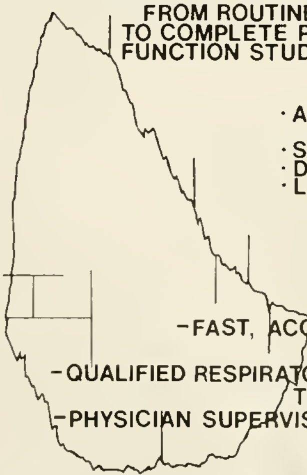

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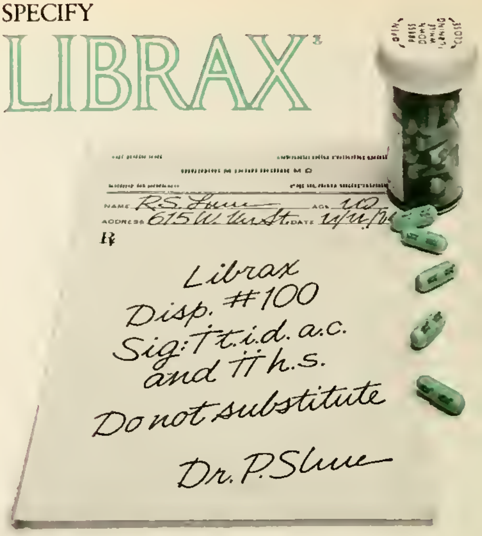

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Contraindications: Glaucoma; prostatic hypertrophy, benign bladder neck obstruction; hypersensitivity to chlordiazepoxide HCl and/or clidinium Br.
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SCIENTIFIC ARTICLE

Female Kallmann's Syndrome

Samuel S. Lentz, M.D., Jamil A. Fayez, M.D., and Suleiman A. Alsuleiman, M.D.

PRIMARY amenorrhea is a challenging problem in gynecologic endocrinology. The hypothalamic-pituitary axis is responsible for about 10% of the cases, chromosomal disorders including gonadal dysgenesis for 60%, congenital abnormalities of the genital tract for 25%, and 5% is due to systemic diseases. The hypothalamic-pituitary disorders are usually manifested by hypogonadotropic hypogonadism in the form of different syndromes of which Kallmann's Syndrome is one to be always remembered in the differential diagnosis of primary amenorrhea. Anosmia associated with hypogonadotropic hypogonadism is almost always diagnostic of Kallmann's Syndrome.

The etiology of primary amenorrhea can be easily pinpointed if one concentrates on the presence or absence of the secondary sex characteristics.[1] If the development of the secondary sex characteristics is complete (breasts, pubic and axillary hair), the problem is probably a genital tract anomaly. If the breasts are well-developed, but the pubic and axillary hair is absent, testicular feminization syndrome is the most likely diagnosis. If the secondary sex characteristics are completely absent, the problem could be gonadal dysgenesis, delayed puberty or, rarely, a hypothalamic-pituitary dysfunction or tumor. Barr body examination, karyotyping, and serum gonadotropin measurement usually confirm this diagnosis.

Materials and Methods

Patients presented were white nulligravidas at 21 and 24 years of age. Each had poor secondary sexual characteristics including short stature, poor breast development and scant pubic hair. There were no stigmata of Turner's Syndrome. Physical examination, including bimanual exam was otherwise within normal limits. Neither patient had withdrawal bleeding with progestational agents; however, vaginal bleeding was induced after estrogen priming. Secondary sexual characteristics responded to estrogen therapy. Neither patient was able to detect odors of ground coffee or perfume.

Initial laboratory studies included low follicle stimulating hormone (FSH), luteinizing hormone (LH) values, normal prolactins and karyotypes of 46, XX. Subsequent laparoscopy revealed infantile internal genitalia with bilateral hypoplastic ovaries. Ovarian biopsies were obtained in both cases for histologic examination and chromosomal analysis. These studies revealed numerous unstimulated primordial follicles and normal female karyotype.

One patient, desirous of pregnancy, underwent clomiphene citrate induction to a maximum dose of 250 milligrams daily for 10 days without ovulation on two successive months. A third trial using clomiphene citrate and human chorionic gonadotropin (HCG) failed to induce ovulation. Both patients during hospitalization underwent pituitary function testing utilizing 100 μg of synthetic gonadotropin releasing hormone (GnRH) and 500 μg of thyrotropin-releasing hormone (TRH) as a one-time intravenous bolus. Measurements of FSH, LH, prolactin, and thyroid stimulating hormone (TSH) were obtained at 15 minute intervals for two hours. Results are noted in tables 1 and 2. The patient desiring pregnancy received 10 μg of GnRH IV every 30 minutes for 10 hours daily for five days in hopes of achieving ovulation. Serum FSH and LH levels were obtained one hour after the last GnRH injection daily, and 24 and 48 hours subsequently. Results are in table 3. This patient had a monophasic basal body temperature chart without evidence of ovulation. Because of expense, human menopausal gonadotropin (HMG) therapy was rejected. Both patients were subsequently maintained on estrogen-progestin withdrawal therapy on a monthly basis.

Discussion

Kallmann's Syndrome was initially described in 1944. It was limited to males and included the triad of hypogonadism, anosmia, and color blindness. Subsequent cases in females were described although the problem is apparently more common in males. Also as noted by Kallmann, the whole spectrum of clinical abnormalities may not be present in all cases.[2] Color blindness was not elicited in the above cases. Although the condition is congenital, the exact mode of inheritance is not known. Merriam recently described a father to son transmission suggesting an autosomal dominant inheritance.[3] Sparkes et al reported familial hypogonadotropic-hypogonadism with anosmia lending support to X-linked inheritance.[4] A human leukocyte antigen (HLA) compatible association has also been reported.[5] Some pathologic evidence of the site of the abnormality in Kallmann's Syndrome has been noted. Males et al report on one male patient with Kallmann's Syndrome who underwent craniotomy for a mass lesion. Agenesis of the olfactory bulbs and tracts were noted; however, no tumor was identified.[6]

The evidence for an isolated defect in hypothalamic-pituitary function is borne out by lack of clinical or laboratory evidence for other pituitary dysfunction as noted in our patients in whom normal prolactin and TSH response was elicited with TRH administration. Others have evaluated pituitary function in patients with Kallmann's Syndrome

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Table 1
Hormonal Response to GnRH and TRH in Female No. 1 with Kallmann's Syndrome

Minutes	−15	0	15	30	45	60	90	120
FSH (mIU/ml)	2	2	4	4	8	10	3	2
LH (MIU/ml)	3	4	6	8	12	10	8	5
PRL (ng/ml)	8	12	56	62	48	30	24	18
TSH (uU/ml)	2.8	3.3	11.4	18.5	22.8	15.5	9.8	4.8

Table 2
Hormonal Response to GnRH and TRH in Female No. 2 with Kallmann's Syndrome

Minutes	−15	0	15	30	45	60	90	120
FSH (mIU/ml)	4	4	3	8	10	10	8	6
LH (mIU/ml)	5	6	5	12	10	15	10	8
PRL (ng/ml)	7	10	44	68	70	40	28	22
TSH (uU/ml)	3.4	3.8	5.6	12.5	18.4	8.6	8.0	6.8

Table 3
FSH & LH Blood Levels during and after GnRH Pulsatile Stimulation for Five Days

Hormone	Baseline	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
FSH (mIU/ml)	4	4	6	10	14	22	14	9
LH (mIU/ml)	7	5	14	16	17	28	21	13

more extensively and noted normal growth hormone, adrenocorticotropic hormone, thyroid-stimulating hormone, prolactin, and vasopressin response.[7]

Although the role of the hypothalamus and pituitary in the pathogenesis of Kallmann's Syndrome has been under debate, recent studies utilizing stimulation of the pituitary-gonadal axis with GnRH induced release of gonadotropins from the pituitary support the hypothalamus as the source of abnormality.[8, 9] GnRH is noted to be necessary for both production and secretion of gonadotropins. This was also noted in the present cases shown in tables 1 and 2. The increase in the levels of FSH and LH was not, however, high enough to induce ovulation, confirming the findings of others.[8]

Use of GnRH in pulsatile form has pointed to the importance of pituitary priming in gonadotropin response. Pulsatile release of GnRH has been documented in normal individuals. The varied response has been attributed to dosage, route of administration, and length of priming realizing the half-life of GnRH is only a few minutes. Table 3 clearly demonstrates that the administration of GnRH in a pulsatile form for 5 days was inadequate for inducing ovulation. The lack of gonadal response with increased estradiol demonstrated by others[9] is not surprising in light of the chronic nature of pituitary deprivation of releasing hormones. Crowley and McArthur recently achieved ovulation in a patient with Kallmann's Syndrome utilizing small doses of GnRH administered at two-hour intervals over a 27-day period.[10]

HMG and HCG have been utilized by Tagatz and coworkers in Kallmann's Syndrome to achieve conception. Pregnancy was achieved in two cases and corpora lutea visualized in another.[11] Clomiphene citrate has also been used without success both alone and in combination with GnRH in males with hypogonadotropic hypogonadism.[12] A similar lack of response to clomiphene citrate was noted in our patient desiring pregnancy.

Finally, GnRH administration is a useful test for determination of site of abnormality in hypogonadotropic hypogonadism although it has met with little success in a therapeutic role of ovulation induction. HMG and HCG can be successfully utilized for ovulation. Clomiphene probably deserves a trial even though its success is greatly impaired with the lack of endogenous estrogen documented by poor secondary sexual development and no withdrawal bleeding with progesterone challenge. When pregnancy is not desirable, exogenous hormone replacement is important for secondary sexual development, pelvic tissue support, sense of normality with monthly menses, and prevention of osteoporosis.

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SCIENTIFIC ARTICLE

Small Cell Carcinoma of the Lung
Results of Combination Chemotherapy and Radiation Therapy

Gustavo S. Montana, M.D., David G. Allen, M.D., Mahesh A. Varia, M.D., David Williams, M.D.,
and Bonnie B. McCafferty, M.D.

SMALL cell carcinoma of the lung (SCCL), which accounts for 20% of all cases of lung carcinoma, has been the object of considerable investigation in recent years. This has led to a better knowledge and understanding of this tumor and to its recognition as a distinct entity. This type of lung carcinoma is readily identified histologically under light and electron field microscopy by its morphology; however, other histologies are seen mixed with this type of tumor in 6% of the cases at presentation and in as many as 29% of cases at autopsy. From the clinical point of view this type of lung carcinoma is characterized by a rapid growth rate, a typical pattern of spread and relapse (skeletal and distant metastases with a propensity for the central nervous system), association with paraneoplastic syndromes, and an exquisite responsiveness to radiation and cytotoxic therapy. Radiologically the tumor usually presents as a large, central, hilar mass but in 10% of the patients it presents as an isolated, peripheral nodule. The majority of the patients (approximately 60%) present with metastatic disease at the outset.

A simple two stage clinical classification is used to categorize the patients according to the extent of their disease. This staging system, developed by the Veterans Administration Lung Cancer Study Group,[1] places the patients into one of two categories. The "limited disease" category includes all patients whose disease is confined to the thorax and adjacent lymph node bearing areas. Patients having disease outside of the thorax and adjacent lymph node bearing areas are considered to have "extensive disease."

Although all forms of therapy have been used for this disease, no single modality has yielded acceptable results. Kemeny et al.[2] reported no survivors at two years with surgery only. Fox[3] reported the results of the randomized, prospective study of surgery alone versus radiotherapy alone for patients with limited disease. In this study there were no long term survivors with surgery only, whereas in the radiation therapy alone group the five year survival was 4%. This trial received a great deal of attention and probably stimulated the design of subsequent trials utilizing chemotherapy in conjunction with radiation therapy. Initially single agents were used, but in subsequent years more effective, multiagent regimens have replaced the single agent protocols.[4, 5] Some of the trials conducted during the last few years have also entailed the use of prophylactic brain irradiation (PBI) for patients with limited disease. The protocols for patients with extensive disease largely entail multiagent chemotherapy with radiation therapy given to areas of bulky disease for consolidation of response to chemotherapy or for symptomatic metastasis.

The purpose of this communication is to report on a series of 18 patients treated according to a protocol utilizing multiagent chemotherapy and radiation therapy. The patients were diagnosed and evaluated at Moore Memorial Hospital in Pinehurst and received radiation therapy at North Carolina Memorial Hospital in Chapel Hill.

Materials and Methods

During the period of this study 18 patients were found to have SCCL and were suitable for treatment according to the protocol. The patients were given the standard evaluation consisting of history, physical, routine laboratory studies, chest x-ray, and brain and bone scans. Liver scans were not

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This investigation was supported in part by Grant Number R25 CA 17973, awarded by the National Cancer Institute, DHEW.

performed routinely. There were 13 patients with limited disease and five patients with extensive disease. As per protocol, the patients with limited disease received chemotherapy on days 1 and 21. In this protocol the chemotherapy was prescribed according to a "unit dose" system rather than on a per-meter-square basis: CCNU 100 mg p.o., Cyclophosphamide 500 mg IV, Adriamycin 50 mg IV, Vincristine 1 mg IV, and Methotrexate 25 mg IV all given in one dose. The chemotherapy cycles were repeated every three weeks with the exception of CCNU which was given every six weeks. The dose of Cyclophosphamide was raised to 700 mg and of Adriamycin to 70 mg for the second cycle and to 1000 mg and 100 mg respectively for the third cycle. The dose of Vincristine was also raised to an upper limit of 2 mg after the first cycle. The chemotherapy program was identical for patients with limited or extensive disease. Patients with brain metastases at the time of presentation also received cranial irradiation at the outset. The chemotherapy was discontinued if there was overt disease progression and deterioration of the patient's general condition. The drug morbidity with this relatively low chemotherapy dose schedule was minimal. The medical oncologist directing the chemotherapy felt that the individual tolerance had been reached in each patient to the point where further drug escalations would be contraindicated. Two weeks after the second cycle of chemotherapy the patients began a course of radiation therapy to the mediastinum and to the primary tumor in the lung to a midplane dose of 3000 rad delivered in two weeks through anterior and posterior portals. PBI was used in five patients treated during the early part of the study. Patients with extensive disease also received radiation therapy to areas of symptomatic, metastatic disease. Both groups of patients continued to receive chemotherapy cycles every three to four weeks beginning two weeks after completion of the course of radiation therapy with dose and schedule modifications as required by the tolerance to the drugs.

Results

The survival for the entire group of patients was 44% at 12 months and 12% at 24 months. Patients with limited disease enjoyed a slightly better survival: 54% and 15% at 12 and 24 months, respectively. The survival curve for the entire group of patients is shown in figure 1. The median and mean survival for both groups of patients is presented in table 1. As can be seen in this table, patients with limited disease had a mean and median survival of 67 and 53 weeks, respectively, whereas for the patients with extensive disease the mean and median survivals were 37 and 40 weeks, respectively. These differences between the patients with limited and extensive disease were not statistically significant.

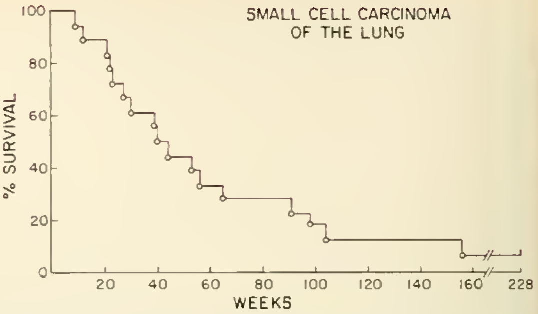

Figure 1. *Survival curve for entire group of patients. One patient after 4 years is alive, free of disease and has been off chemotherapy for two years.*

Of the 18 patients treated, one patient is still alive, without evidence of recurrent or metastatic disease after a follow-up period of more than 4 years. Another patient died of pneumonia after having been followed for nearly 3 years without evidence of recurrent or metastatic disease, but since no autopsy was performed he is considered to have died of uncontrolled disease. The remaining 16 patients died at varying intervals post diagnosis and the majority of them had more than one site of relapse. The liver and brain were the sites of relapse in five patients. Next in frequency were lymph nodes in four patients, skeletal metastasis in four other patients and miscellaneous other sites in two patients. Only one patient had relapse in the lung contiguous to the area treated. Relapses within the irradiated field were not recorded, but this assessment was made simply on the basis of serial chest x-ray studies. Brain relapses were observed in five patients among the group of thirteen patients who did not receive PBI. No brain relapses were recorded among the patients who received PBI.

Aside from the usual morbidity associated with chemotherapy and radiation therapy consisting of nausea, leukopenia, alopecia, and radiation esophagitis, there was no morbidity or complications of significance observed with this protocol.

Table 1
Small Cell Carcinoma of the Lung

Protocol			
Chemotherapy		Radiotherapy	
* 1. CCNU	100 mg. p.o.	Limited Disease	Extensive Disease
† 2. Cyclophosphamide	500 mg. IV.		
† 3. Adriamycin	50 mg. IV.	Mediastinum and Primary 3000 R/2 weeks	Mediastinum and Primary and Sites of Known Metastases, if possible 3000 R/2 weeks
† 4. Vincristine	1 mg. IV.		
5. Methotrexate	25 mg. IV.		
		‡ PBI	No PBI

* Given every six weeks
† Dose escalations as described in the text.
‡ Given only at the beginning of the study.

Discussion

Without any doubt the multi-modality treatment approach for SCCL has improved significantly the immediate results and potential outlook for this disease. Neither surgery nor radiation therapy or chemotherapy alone offers any hope of prolonged survival. However, it is now evident that the judicious combination of multiagent chemotherapy and radiotherapy have provided short but definite improvement in the length and possibly in the quality of survival in patients with this disease.[6] Furthermore, now with the role of chemotherapy and radiotherapy better understood the role of other modalities such as limited surgery for bulky or residual disease and of immunotherapy may be more easily investigated and defined. These new approaches hold the promise of prolongation of survival, improvement of the quality of life, and perhaps complete arrest of the disease. We have witnessed in recent years a dramatic change in the results of treatment and in the outlook toward this disease, which was heretofore viewed hopelessly. Currently palliation may be obtained in practically all the patients; possibly of more significance is the fact that some patients go on to achieve complete remission and to enjoy prolonged survival. Within this smaller group there are some patients who appear to be cured of their disease.

Several advantages to this chemotherapy schedule should be mentioned. First and foremost there were no deaths or significant complications from the chemotherapy. This is of particular significance when one reviews more aggressive protocols that carry a significant complication and even mortality rate with a very similar survival rate to this one. Second, the patients treated according to this protocol received the chemotherapy and the radiotherapy on an out-patient basis. Whereas the radiation therapy was given in a university center at some distance from the local communities where most of these patients resided, the chemotherapy was administered locally lessening the burden to the patients, which demonstrates the advantages of collaboration between a university medical center (NCMH) and a community hospital (MMH). Lastly, the drug doses prescribed matched the dose quantities provided by the pharmaceutical companies in their standard ampules, greatly reducing drug wastage and cost.

The relapses in this group of patients were primarily in the brain, liver, lymph nodes, and bone. Although this protocol did not include PBI, its role is being evaluated for patients with limited disease entering complete remission and being so maintained for six months. This approach would spare many patients from unnecessary brain irradiation particularly since PBI is effective in lowering the incidence of brain relapses but does not prolong survival.

A treatment program such as this one leaves several unanswered questions. The two most obvious, major questions are: 1) Would higher doses of chemotherapy, given earlier, result in greater tumor cell kill delaying the development of resistant clones and thus improving the complete remission and longterm survival rates? 2) Should prophylactic brain irradiation be employed? This is being considered for patients who have entered and are being maintained in complete remission for a minimum period of six months. Other minor questions may be posed dealing with the drug combinations, specifically the potential longterm complications of CCNU: leukemogenesis and organic brain syndrome. Also, since CCNU is fat soluble, will it be helpful in controlling CNS metastases? Does Methotrexate truly contribute to tumor response or would other drugs such as VP-16 be better? The multiple, controlled clinical trials already in progress in this country may provide answers to these questions.

The substantial improvement achieved in this disease in the last 15 years has been the result of the cooperation between the various oncologic specialties and the careful and methodical application of the principles learned in the clinical setting. SCCL is no longer a rapidly progressing, fatal malignancy but one in which effective palliation may be achieved in most patients and some enjoy long term survival although cure of this disease remains elusive. New approaches may become available that could prolong not only the periods of remission and symptom free survival but perhaps also offer a definite and significant hope for cure.

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SCIENTIFIC ARTICLE

Oozing and Bruising: von Willebrand Disease and Qualitative Platelet Defect

John J. Stuart, Ph.D., M.D., and Virginia D. Burnette

"YOU have hemophilia but your tests don't show it," a patient of mine was informed. He had bled excessively after a tonsillectomy and had bruised easily all of his life, as had other members of his family. His prothrombin time, partial thromboplastin time, platelet count and bleeding time were normal but his physicians had recognized that he was hemostatically abnormal. In fact, testing established the diagnosis of a congenital qualitative platelet defect.

His case demonstrates a point. "Bleeding disorder" is often equated with hemophilia, but the most common cause of excessive "oozing and bruising" is not hemophilia (sex-linked factor VIII and factor IX deficiency) but rather von Willebrand disease and the qualitative platelet defect. The former is almost always congenital, while the latter is more often acquired but occurs congenitally.

The Role of the Platelet in Hemostasis

Central to the understanding of both of these disorders is knowledge of the role of the platelet in hemostasis. This small cell, lacking a nucleus but metabolically and structurally complex, is the first line of defense in plugging a gap in a blood vessel. It adheres to the exposed subendothelial collagen and then aggregates to form a clump of fused material which both inhibits blood loss and serves as a nidus for the formation of fibrin. Phospholipid substance (platelet factor III) exposed during platelet aggregation is a necessary participant in the enzymatic reactions leading to thrombin generation.

The Role of von Willebrand Factor

Coagulation "factors," which are plasmatic proteins, are likewise necessary to proper platelet function. Von Willebrand factor, a portion of the factor VIII molecule, is the most important. It is bound to the circulating platelet and appears to act as a bridge between a receptor on the platelet membrane and the collegen to which it adheres.[1]

The incidence of this autosomal dominant disorder is unknown since it is often mild and goes undiagnosed. Moderate and severe deficiencies, however, are marked by troublesome bleeding, both spontaneously and after trauma.

Diagnosis is based on clinical suspicion aroused by the presence of a history of excessive bruising and bleeding which may or may not be accompanied by a positive family history. Epistaxis, chronic gastrointestinal bleeding, menorrhagia and excessive or delayed bleeding after surgery are the most common problems. Table 1 shows the results of the indicated coagulation tests. The most consistent abnormality is a low von Willebrand factor assayed by ristocetin-induced agglutination of platelets. In mild von Willebrand disease this may be the only abnormal test. Factor VIII coagulant activity and antigen may be normal as may the template bleeding time. The partial thromboplastin time, which is prolonged only when the factor VIII coagulant level is less than 20% to 30%, is normal except in severe von Willebrand disease.

Most von Willebrand disease is of the mild variety but severe cases with undetectable von Willebrand factor and low factor VIII coagulant activity occur. The propensity for bleeding is roughly correlated with the degree of deficiency in von Willebrand factor and the prolongation of the bleeding time. If treatment is needed, fresh frozen plasma or cryoprecipitate should be used. Plasma is the best choice so long as over-expansion of the intravascular volume is not a problem since the risk of serum hepatitis per unit of factor eight administered is about one third as great with plasma as with cryoprecipitate. In general, mild to moderately severe von Willebrand disease can be treated with plasma while severe disease will require cryoprecipitate, especially in the case of major surgery. Factor VIII concentrates should not be used to treat von Willebrand disease as they appear to be ineffective and have a high risk of transmitting hepatitis.[2]

Not all patients with von Willebrand disease need receive plasma before surgery. Those with a mild deficiency may tolerate even major surgery without excessive bleeding. Most helpful in making a decision whether or not to use prophylactic plasma before surgery is the history of the patient's prior experience with surgery and tooth extraction. The lack of bleeding during such procedures makes it likely, but not certain, that the patient will not require plasma for anticipated surgery. The potential damage from excessive bleeding must also be assessed. Intracranial surgery would dictate pretreatment of patients with even a mild deficiency while one could safely adopt a wait and see attitude with extremity surgery, for example.

The Qualitative Platelet Defect

Defective platelet function is a common cause of excessive bleeding. The qualitative platelet defect may be congenital or acquired. The diagnosis of the congenital defect depends upon demonstrating defective platelet aggregation in a patient who has no findings to suggest an acquired

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Table 1
Coagulation Tests in von Willebrand Disease and Qualitative Platelet Defect

	Von Willebrand Disease	Qualitative Platelet Defect
Prothrombin time	normal	normal
Partial thromboplastin time	normal or increased	normal
Bleeding time	normal or increased	normal or increased
von Willebrand factor*	low	normal
Factor VIII coagulant activity	normal or low	normal
Factor VIII antigen	normal or low	normal
Platelet aggregation with ADP, epinephrine, collagen	normal	abnormal

Abbreviations: ADP — adenosine diphosphate
* Assayed as ristocetin co-factor

defect (table 2). Demonstrating defective platelet aggregation in other family members is, of course, very useful in confirming the congenital nature of the defect.

The most difficult aspect of establishing a diagnosis of congenital qualitative platelet defect is excluding drug effect in the patient with abnormal platelet aggregation. One aspirin tablet will alter irreversibly the aggregation pattern of the subject's platelets for the life span of the platelet (8 to 10 days).[3] For this reason platelet aggregation studies must be delayed for ten days when a patient has taken aspirin. Other anti-inflammatory drugs (e.g., Motrin, indomethicin, phenylbutazone), whose effect is mediated through the inhibition of prostaglandin synthesis, also inhibit platelet aggregation, but unlike aspirin their effect lasts only so long as the drug is present in the blood stream. A 48 hour waiting period is sufficient before performing platelet aggregation studies in the case of these drugs. All other non-essential drugs should be stopped for 24 hours prior to testing as a general rule since data on which drugs do and do not affect platelet aggregation studies are incomplete.

Because many patients cannot recall when they last have taken aspirin or have taken across-the-counter medications which contain aspirin, it is good practice to repeat all abnormal platelet aggregation studies in two weeks, after stressing the need for the patient to avoid aspirin and aspirin-containing compounds. If a second testing remains abnormal, the diagnosis is confirmed. Occasional patients, for reasons of secondary gain, may conceal aspirin ingestion. Obtaining a serum salicylate level will aid in detecting these individuals.

Table 2
Causes of Acquired Qualitative Platelet Defect Severe Enough to Cause Hemorrhage

1. Drugs
   A. Non-steroidal anti-inflammatory agents (aspirin, ibuprofen, indomethicin, phenylbutazone)
   B. Anti-platelet anticoagulants (sulfinpyrazone, dipyridamole, aspirin, high molecular weight dextran)
   C. Penicillin G, carbenicillin, ticarcillin, methicillin (when normal therapeutic drug levels are exceeded, as in renal failure without lowering of dosage)
2. Uremia
3. Myeloproliferative disorders (acute and chronic myelogenous leukemia, pre-leukemia, myelofibrosis, essential thrombocytosis)
4. Disseminated intravascular coagulation
5. Paraproteinemias (especially macroglobulinemia)

The Pattern of Inheritance of Congenital Qualitative Platelet Defects

Most are inherited in an autosomal dominant fashion.[4] Exceptions include two rare and relatively more severe bleeding disorders: Glanzmann's thrombasthenia and Bernard-Soulier syndrome, which are autosomal recessive. The milder, more common, dominantly inherited congenital platelet defects are incompletely characterized as to etiology. Two classes, indistinguishable clinically, have been described: faulty release reaction — also called aspirin-like defect[4] and storage pool disease[5] in which platelet intracytoplasmic granules are deficient in ATP.

Most cases are mild and may require no treatment. If the template bleeding time is grossly prolonged (greater than 20 minutes) or the patient has a history of prolonged hemorrhage after tooth extraction or surgery, a transfusion of six units of platelets prior to the procedure is usually sufficient. If possible, single donor ("pheresis") platelets should be used because they expose the patient to only one donor and thus minimize the risk of serum hepatitis. Extractions of single teeth can usually be done without platelet transfusion using the antifibrinolytic agent epsilon-aminocaproic acid (Amicar) at a dose of 50 mg/kg given orally every six hours. It should be started the night prior to extraction and continued seven days.

Summary

Von Willebrand disease and the congenital qualitative platelet defect are common bleeding disorders which often are mild. Recognizing them is important, however, especially when they are manifest as recurrent gastrointestinal hemorrhage which, unless an anatomic problem is identified, should be treated by correction of the deficiency with plasma or platelets rather than by surgical exploration.

Table 3
Incidence of Previously Undiagnosed Bleeding Disorders 1978 to 1983

	# of Patients	Percentages
von Willebrand disease	29	28
Qualitative platelet defect	59	57
Factor VIII deficient	9	9
Factor VII deficient	1	1
Factor XI deficient	1	1
Factor IX deficient	1	1
Spontaneous inhibitors	3	3

Table 3 shows the frequency of the undiagnosed bleeding disorders seen on the inpatient and outpatient adult coagulation service at the Bowman Gray School of Medicine over the past five years. Von Willebrand disease and the qualitative platelet defect make up 85% of the total. This figure should not be mistaken for the incidence of these two disorders in the general population. Most patients with severe bleeding disorders such as the classical hemophilias (factor VIII and factor IX deficiency) followed in our institution have already been diagnosed elsewhere and are not included in table 3.

The best first screening for these two bleeding disorders is the medical history. If positive, complete evaluation will include assays for the various factor VIII related activities and, additionally, platelet aggregation studies in most instances. A normal prothrombin and partial thromboplastin time and even a normal bleeding time do not exclude the possibility of von Willebrand disease or qualitative platelet defect.

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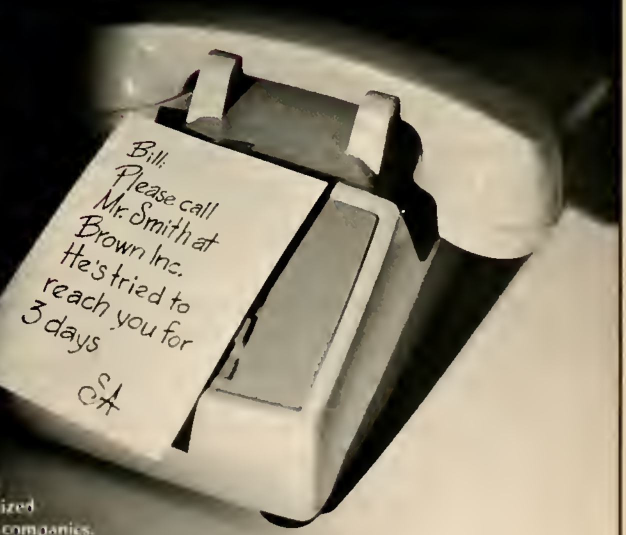

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SCIENTIFIC ARTICLE

Fatal Pulmonary Hypertension in a Patient With Mixed Connective Tissue Disease

Holland M. Addison, Jr., M.D., and Peter M. Levitin, M.D., F.A.C.P.

MIXED connective tissue disease (MCTD) is an apparently distinct rheumatic disease syndrome clinically with features that are common to systemic lupus erythematosus, scleroderma, and polymyositis and is characterized serologically by high titers of antibody to the ribonucleoprotein component of extractable nuclear antigen.[1] Pulmonary hypertension has been infrequently reported in patients with MCTD.[2-11] Very few patients are reported who have died as a direct result of pulmonary hypertension.[2, 8, 9-11] We report an unusual case of MCTD with fatal pulmonary hypertension three months following her initial presentation.

Case Report

A 28-year-old black female was admitted to Moses H. Cone Memorial Hospital for evaluation of increasing malaise, shortness of breath, and a new heart murmur. MCTD was diagnosed three months earlier with manifestations of pericarditis (no effusion), arthralgias, Raynaud's phenomenon, alopecia, scleroderma, "salt and pepper" skin (over the face, clavicle, arms, legs), leukopenia, anemia (Coombs' positive, non-hemolytic), positive lupus erythematosus cell test, positive serum fluorescent antinuclear antibody test, and high titer of hemaglutinating antibody to extractable nuclear antigen (1 : 100,000) with ribonucleoprotein positive (immunodiffusion study) and Sm negative. She responded to aspirin and was able to return to work as a manager in a textile plant. She remained relatively well until three weeks prior to admission when she developed a migraine headache (transient blurred vision in the left eye followed by a left hemi-cranial headache) which resolved in 48 hours. Two weeks before admission, she developed increasing fatigue, myalgias, arthralgias, and shortness of breath so that she stopped work four days prior to admission.

On physical examination, the patient was ill-appearing, restless and tachypneic. Blood pressure was 94/80 (no paradoxical pulse), pulse 104 beats/minute, respirations 36/minute and temperature 97.8°F. (The temperature rose to 101.5°F two hours after admission.) There was hypopigmentation with follicular plugging over the nose, malar areas, clavicles, and anterior lower extremities and tight skin over the fingers. Jugular venous distention was not noted. The lungs were clear to percussion and auscultation. A grade II/VI musical regurgitant systolic murmur was heard at the left sternal border, thought to represent tricuspid regurgitation. The heart tones were good, with split S1 and normal splitting S2 (P2 = A2). The liver was enlarged and pulsatile and there was a positive hepatojugular reflux. The fingers were swollen. There was no edema of the legs.

Admission laboratory data included a blood urea nitrogen of 16 mg/dl, serum creatinine 1.3 mg/dl, urinalysis 1+ protein, hemoglobin 10.8 g/dl, white blood count 4700/mm^3, platelet count 64,000/mm^3, prothrombin time 35.4 seconds (control 11.5 seconds), partial thromboplastin time 55 (control 24 seconds), total bilirubin 2.2 mg/dl, SGOT 125 IU/L (normal 0-32), SGPT 94 IU/L (normal 0-45) and LDH 476 IU/L (normal 0-220). Blood cultures were negative. Arterial blood gas on room air showed a pH of 7.48, carbon dioxide tension 15 mm Hg, and oxygen tension 59 mm Hg. A chest roentgenogram demonstrated an enlarged cardiac silhouette without frank pulmonary edema. The electrocardiogram showed a right axis deviation not present previously and an echocardiogram revealed a large pericardial effusion. Penicillin and Tobramycin were started for suspected bacterial endocarditis and high dose intravenous steroid was started for suspected pericardial effusion and/or myocarditis secondary to the MCTD.

An emergency right heart catheterization was done eighteen hours after admission because of the question of cardiac tamponade (increased jugular venous distention with a rapid Y descent and paradoxical pulse). The catheterization revealed that the pulmonary artery pressure was 70/50 mm Hg with a mean pressure of 60 mm Hg. The mean right atrial pressure was 20 mm Hg with a normal pulmonary capillary wedge pressure. The study was consistent with pulmonary hypertension. The patient had persistent hypotension with lactic acidosis, decreased mental function, and right ventricular failure. Despite vigorous supportive care, she died 48 hours after admission.

Microscopic examination of the lungs disclosed arterioles with intimal hyperplasia with obliteration of the lumen (figure 1). There was no interstitial fibrosis or evidence of thromboembolic disease. Other findings included a chronic lymphocytic thyroiditis, myositis, and lymph node hyperplasia.

Discussion

MCTD has generally been considered a benign rheumatic disease with a characteristically good response to corticosteroids.[1] Pulmonary involvement characterized by decreased pulmonary diffusing capacity in MCTD has been reported commonly.[2, 6, 7] Nonfatal pulmonary hypertension is reported more commonly in children than adults with MCTD.[3, 4, 5]

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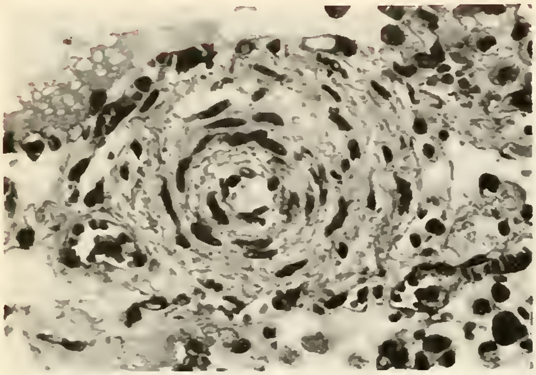

Figure 1. *Postmortem lung tissue showing an arteriole with intimal hyperplasia obliterating the lumen. (Hematoxylin and eosin; original magnification × 400.)*

Only five patients with MCTD have died as a direct result of pulmonary hypertension.[2,8-11] Esther et al[8] reported one death directly attributable to pulmonary hypertension from a group of 26 patients with a connective tissue disease and high titers of ribonucleoprotein (the age of the patient was not reported). The onset of the patient's pulmonary hypertension was clinically insidious. A proliferative vasculopathy was found at autopsy. Jones et al[9] described a female adolescent with MCTD who died of fatal cor pulmonale. She was treated with prednisone and azathioprine for an immune-complex glomerulonephritis. Renal function improved with treatment, but her pulmonary hypertension was progressive. Recurrent thromboembolic lesions were found at autopsy in the small pulmonary arteries and arterioles with no evidence of pulmonary arteritis or vascular immune-complex deposition. The third case of fatal pulmonary hypertension[10] was that of a 36-year-old black woman with a one-year history of MCTD who died as a result of pulmonary fibrosis, pulmonary hypertension, and myocardial fibrosis. Pathologic examination revealed marked interstitial fibrosis in the lungs and thickening of the pulmonary vasculature. Bennett et al[2] report four patients with MCTD who died of pulmonary complications, one of whom was a 14-year-old girl who developed a fulminant pulmonary vasculitis and died within three weeks. Wiener-Kronish et al[11] report a 21-year-old patient with MCTD who died of cardiopulmonary arrest. Histologic examination of the lungs showed an acute necrotizing arteritis and focal fibrinoid necrosis as well as chronic intimal thickening in some vessels and plexiform lesions.

Primary pulmonary hypertension should be considered as a presentation or complication of MCTD.

Acknowledgment

The authors thank Doctor Charles Hassell for the photography.

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LEARNING WITHOUT WORK

Humanism and Medicine: The Patient Centered Approach

Peter R. Lichstein, M.D.

WE frequently hear the lament that today's physician, carefully trained though he is in biomedical science, has lost sight of his patient's deeper needs. It is popularly assumed that given the current emphasis on medical technology the physician in training has strayed from the traditional grounding of medical practice in humanism. All is not as bad as current opinion suggests.

The Patient's Story

A 20-year-old single, white male college sophomore was admitted to the hospital with a four-day complaint of orthostatic dizziness and tarry stools. He had used up to six tablets of aspirin per day for headache, drank four to six beers each weekend but did not smoke cigarettes. The patient's father had developed a "bleeding ulcer" two years previously.

This attractive white male had obvious pallor, a 30 mm Hg orthostatic drop in the systolic blood pressure, moderate midepigastric tenderness on deep palpation and hemoccult positive maroon stool on rectal examination. The hematocrit reading was 21% and the gastric aspirate was negative for blood. Endoscopy revealed a duodenal ulcer without active bleeding. The patient was admitted and received two units of packed red cells, cimetidine and antacids. He remained stable without further evidence of bleeding.

From a strictly biomedical standpoint, the case was closed at this point. The young man could have been discharged with a prescription and a followup appointment along with counseling regarding avoidance of known gastric irritants. The attending physician or chief of staff would quiz the resident regarding the pathogenesis of peptic ulceration, its treatment, and/or current controversies in the management of upper gastrointestinal bleeding. In most cases, the resident would not be asked to report the important psychosocial components of the history, let alone provide hypotheses relating this information to issues of etiology, onset, and management of duodenal ulcer. This patient, however, had the good fortune of having a resident who was interested in the care of the person as well as the treatment of ulcer.

A Learning Experience

In the Emergency Room the resident noticed that the patient was struggling to keep his anxiety under control. Sensing that the patient's "cool" was superficial, the resident asked a few open-ended questions about the young man's recent experiences. The patient related the trying events of previous months with evident relief. Since coming to college he had become increasingly involved in social and athletic activities, until a recent deterioration in his grades provoked a profound concern, bordering at times on panic, about his father's possible response. The resident, once again picking up on the clinical clues, asked about the patient's father and relationships within the family. The patient had identified closely with his father and his high standards of moral conduct and academic achievement. These feelings of allegiance and love were severely taxed, however, when his parents divorced six years previously. The patient did not know how to express his disapproval when his father married a younger woman. In the weeks prior to this hospitalization, with his grades faltering, the patient experienced a resurgence of ambivalent emotions toward both parents, but didn't know where to turn. He felt increasingly isolated.

Given this background, obtained through a few questions and about 10 minutes of careful listening, the resident hypothesized that long-standing emotional conflicts along with the intense anxiety of recent months might have been significant determinants in the expression, at that particular point in time, of a somatic predisposition to peptic ulceration. Furthermore, independent of the validity of this hypothesis (of which he was not over-confident), the resident felt that his patient was experiencing problems in personality development appropriate to his age, and that the crisis of illness and hospitalization might provide a unique opportunity for the patient to work out some of his difficulties. Through several brief, informal talk sessions, which the resident worked into his busy schedule, the patient began to express his anger with both parents and to articulate his major emotional conflicts. The patient's response to concerned phone calls from his mother and a precipitous visit by his father provided a ready testing ground for his emotional progress. The resident and patient talked over alternative coping strategies and ways of communicating more effectively with his parents. At the time of discharge, the patient, stable from a medical standpoint, reported that more than his stomach felt better. Although we have no followup as to how the patient fared with his ulcer and his family (he was to be followed in the student health service), we assume that he had many things upon which to reflect, along with a pill to take four times a day.

Message to Those Interested in Medical Education

I believe the message of this story is clear. Through

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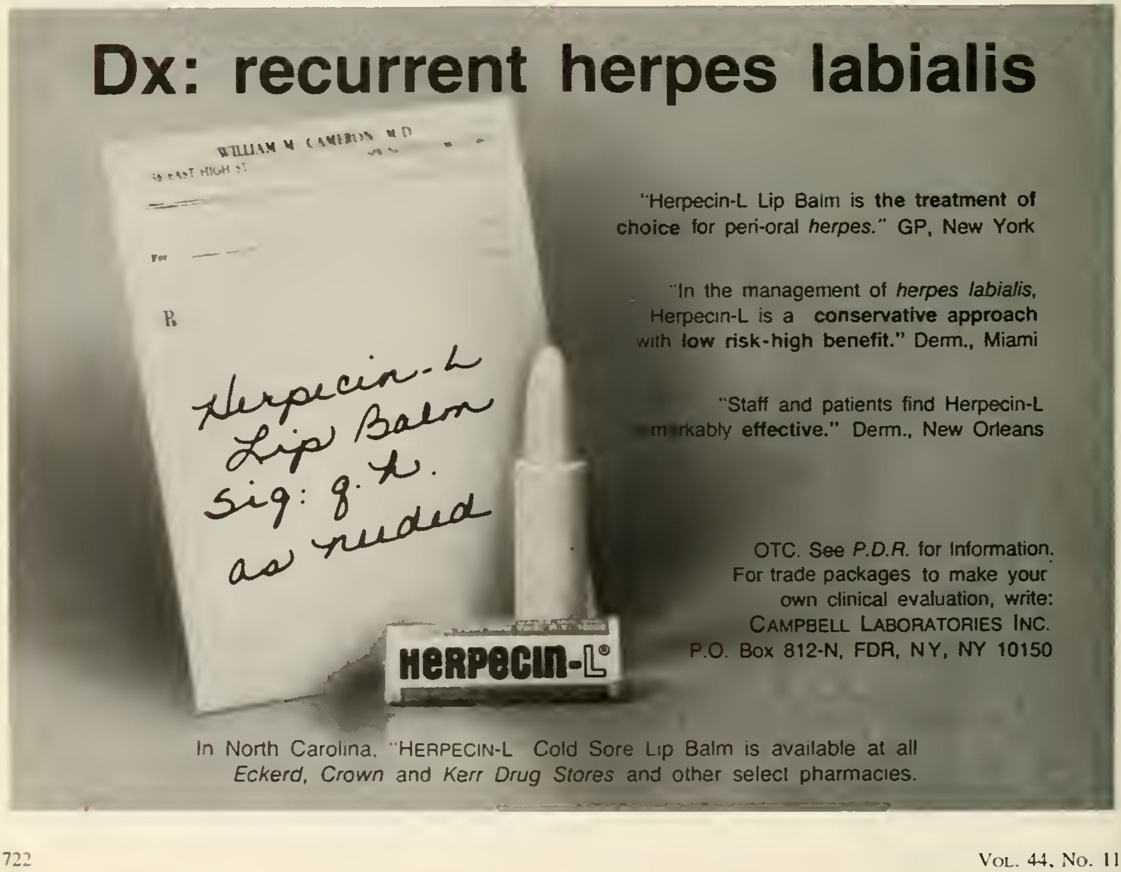
sensitivity and attention to his patient's distress, the resident accomplished something more than managing an ulcer; he helped discover dignity and meaning in the human experience of illness. Along with the necessary treatment of disease, the patient received an impetus to productive change at a time of crisis. He had something to remember. The resident in turn felt amply rewarded, reporting that the experience met his expectations of what a doctor really does.

Despite the popular criticisms of medical education, I frequently see our residents striving to vitalize the ideals of humanism in clinical care. They use the patient-centered approach to practice humanistic medicine. I have to admit that all too frequently the resident's interest in patient-centered care does not receive needed reinforcement and guidance. Although he may be exhorted by the Dean, the chairman of Medicine, and the ward attendings to be "humanistic," the day-to-day efforts at integrating human concerns with medical science are often allowed to occur unobserved and unsupervised. An overwhelming emphasis on the importance of pathogenic mechanisms and the latest in disease management gives the message that the patient's experience of illness is of little real importance in the business of medicine. Many residents do struggle to make sense of the patient's illness as well as his disease. Most are open to educational efforts without which their skills in the realm of humanism are left to grow or wither, as it were, by Topsy. Opportunities for learning like the one reported here are not unusual. A return to the patient-centered approach in medical education can maintain the needed connection between academic departments of medicine and the foundations of medical practice in the healing arts.



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Features for Patients

See How They Grow

Nancy E. Friedman, M.D.

Parents, are you amazed at the expense of keeping your children clothed? And the cost of shoes is outrageous. It's a fact of life that as children age, they grow and that means a rapid turnover in wardrobes. Have you even tried to buy clothes just a little too large, hoping your children will get an extra season's wear out of them? No such luck during adolescence. Some teens seem to outgrow new outfits even as they're being purchased.

All parents take pride in their growing children and adolescents and may take for granted the phenomena of normal growth and development. Growth is in fact a carefully orchestrated symphony and one of nature's most remarkable miracles. Thousands of proteins and hormones harmonize to promote weight gain, muscle development, bone growth, fat deposition, and a host of other body processes.

The most remarkable period of growth takes place just after conception. The fetus inherits a program, its genetic material, which dictates sex, organ development, eye color, hair color, personality traits, etc. The first requirement for normal growth and development is a normal genetic complement. If there are major abnormalities in chromosome number or structure, survival beyond the first few weeks of conception is unlikely. Children born with disorders of chromosome number or structure are often small at birth and grow poorly throughout infancy, childhood, and adolescence.

Given a normal genetic program, the growth and development of the fetus are influenced by a variety of environmental factors. Maternal nutrition must be adequate to support the remarkable growth which brings a fertilized egg to the size of a full term infant. Health care providers have recently placed great emphasis on the nutrition of the mother-to-be, emphasizing adequate calorie intake in balanced meals to provide protein for developing organs and calcium for the growing skeleton. A regular program of exercise is encouraged to improve circulation and increase fitness in preparation for labor. Many physicians caution pregnant women to avoid all drugs and refrain from taking any alcoholic beverage; the negative effects of frequent alcohol ingestion on the growing fetus are well known. Although we know the effects of many agents harmful to the growing fetus, many other environmental pollutants are present in high concentrations in our food chain and their effects are only now beginning to be investigated.

Given a normal gene composition and a pregnancy uncomplicated by major environmental insults, the infant will grow and develop according to the genetic program. In general, tall parents will produce tall offspring and short parents will produce short offspring. The pattern of growth and weight gain throughout childhood and adolescence is often an inherited trait as well. Not infrequently the unworried parent of a slowly developing teenager will assure the pediatrician that the child is "a carbon copy of his Dad." The parents are often correct in anticipating that their children's pattern of de-

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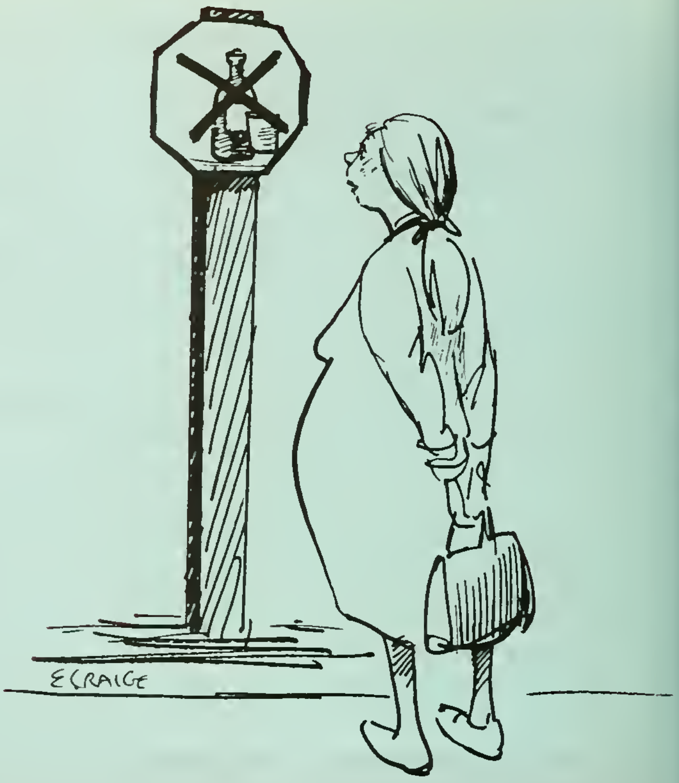
From the Department of Pediatrics, Duke University Medical Center, Durham NC 27710.

Drawings by Ernest Craige, M.D.

velopment might resemble close relatives.



There are factors that may profoundly alter the pattern set forth by the genetic program. These include congenital malformations of any of the major organ systems. Such defects are commonly associated with poor growth, although the cause of the association is not always well understood. Sometimes these malformations may not be obvious during the physical examination. For instance, poor kidney function caused by a congenital malformation may not be discovered until urine and blood tests are performed as part of an evaluation of growth failure. Some children are born with a hormonal deficiency that may initially be manifested by growth failure. If discovered early, hormonal replacement may restore normal growth. In these cases poor growth is the only clue that there are significant underlying medical problems. An acquired illness that leads to chronic malfunction of any organ system can also affect the growth of a child. For example, meningitis may damage the pituitary gland which produces several growth-promoting hormones.

Did you know that certain hormonal problems may actually cause abnormally rapid growth? Although these sorts of problems are rare, they are significant and require prompt evaluation and therapy.

Well, this matter of growth is not as simple as you might have thought. At this point you may be squirming just a bit in your chair. If growth is so complicated, how do you know if your child's growth is normal? Luckily charts and graphs have been developed which allow your doctor to determine if your child's growth is within the normal range. They require accurate height measurements obtained at yearly intervals or more often if there is concern about the growth rate. Once these data are obtained, they can be plotted on a growth chart and the relationship to a normal growth curve will indicate if an individual's rate of growth is normal. The growth curves were designed by accurately measuring thousands of children and subsequently following their growth year by year. The series of lines represent growth percentiles and allow a child's height to be compared with the heights of other normal children of the same age. There are similar curves for weight.

During childhood, that is between the ages of 3 and 11 years, most children's growth continues along a percentile line. A child growing along the third percentile consistently from year to year is probably normal and, not surprisingly, may have a parent or several family members whose height falls on the third percentile. Consider, however, the child who was once growing at the 97th percentile but has subsequently fallen to the 50th percentile. No one would describe this child as short because his height is average for his peer group. The slowing of his growth is abnormal, however, and this may be the first clue that there is a significant medical problem (Fig. 1). If a child's height is accurately and frequently obtained and plotted on a growth curve, very subtle decreases in growth velocity may be appreciated long before there are any other manifestations of disease.

Now you may ask, What serious illnesses could present with only slowing of growth? The answer to that question may surprise and impress you: kidney malfunction, bowel inflammation, arthritis, thyroid disease, cortisone excess, and brain tumors. As you read this list of significant medical problems, you may become alarmed, especially if your child has had some slowing of his growth. Remember, though, that growth is a complicated process and an intermittent slowing of growth is entirely normal. For instance, children grow better in the spring than during other seasons. Also, in the early teenage years there is quite a bit of variation in the timing of the growth spurt. Some children are normally a bit delayed in their pubertal development and their growth logs behind that of their peers. Most frequently this does not represent a significant medical problem.

Your doctor probably has obtained accurate growth data and can show you the pattern of your child's growth on the growth curve. If there appears to be some slowing of growth, then your physician will probably take extra time to carefully question you and your child about several aspects of the medical history after which he will perform a careful physical examination.

Your doctor will of course have a record of both parents' heights and growth patterns. Obviously parental heights influence a child's stature and the patterns of pubertal development in close family members may be significant as well. The age of onset of menses in female relatives or the timing of the father's pubertal growth spurt may shed light on an offspring's development. Alternately there may be such variance in this developmental history that it may give the physician more cause for concern.

The physician will then obtain a "review of systems" (Table 1) — take a minute and look over this list of questions designed to alert the physician to symptoms of illness. Then a careful physical examination will be performed. In most cases the history, review of systems, and physical examination will be reassuring that there are no underlying medical problems. However, careful follow-up is in order and in a few months the growth rate should be re-evaluated. A persistent slowing of growth cannot be ignored.

Occasionally, the history, review of systems, and/or physical examination may provide important clues to the cause of the abnormal growth. The physician may then order laboratory tests and x-rays designed to confirm his clinical suspicions.

Frequently the physician is unable to detect any obvious problems from the history, but will choose to perform a few laboratory tests, screening for the most common causes of growth failure. If these tests are normal the doctor may decide to simply follow the child's growth carefully. If growth failure persists, the physician may request a consult from a pediatric endocrinologist, a specialist in the evaluation and management of growth problems in children.

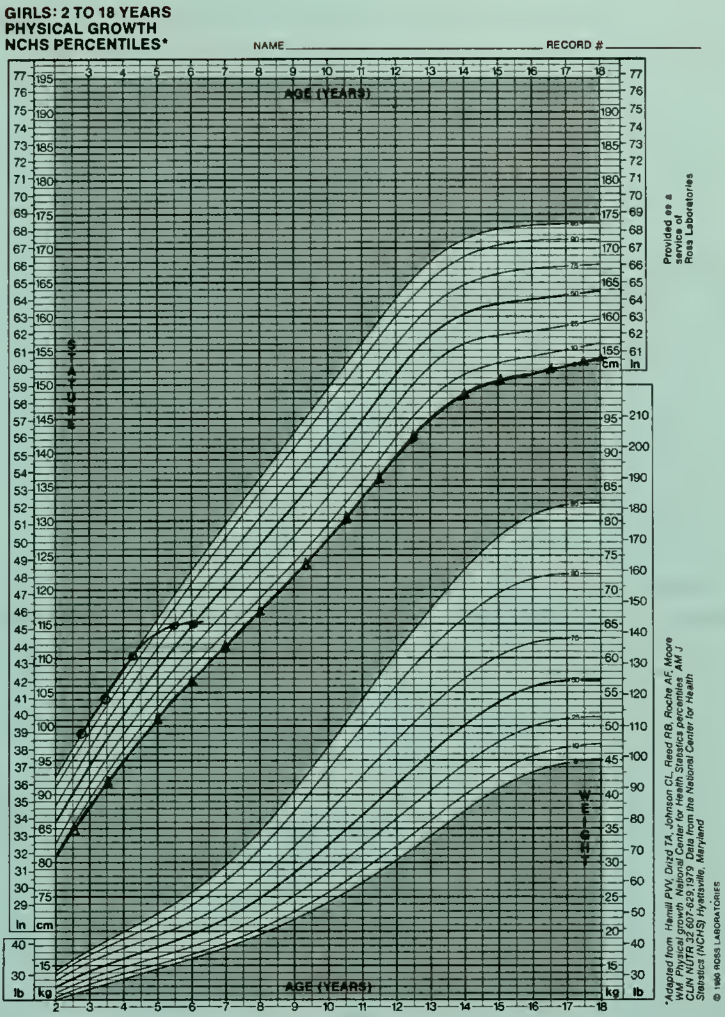


Figure 1. The growth curves of two patients are displayed. Patient 1 (Δ—Δ) is a normal girl who is short. She grew at a normal rate throughout life and is a healthy adult now. Patient 2(o—o) demonstrates an abnormality in growth first evident at 5½ years of age. Although this patient would not be considered short, it is evident that the growth rate is abnormal. This child requires evaluation and diagnosis.

Let us discuss now the most common causes of slow growth during childhood and adolescence. Pediatric endocrinologists evaluate many concerned teenagers who are smaller than their peers. If we think back to our own adolescence it is easy to understand why these adolescents are so anxious. Participation in extracurricular activities has mothers carpooling every afternoon to soccer team practice, piano lessons, school play rehearsals and the like. The teenager who excels at sports is the school hero. Going to the prom, trying

Table 1. Review of Systems

General questions: activity level, school performance, relationship with peers, body image, eating habits, appetite, change in personality

Endocrine system: thirst, increased urination, nighttime urination, bed wetting, salt craving, constipation, diarrhea, heat intolerance, cold intolerance, menstrual irregularities, change in skin texture, change in skin color, changes in hair

Head, ears, eyes, nose, throat: headaches, dizziness, seizure activity, coordination difficulty, loss of balance, earaches, ear discharge, ringing in the ears, visual changes, blurred vision, nose bleeds, frequent colds, coughs, sinus congestion, sore throat, hoarseness, difficulty swallowing, dental problems, bleeding gums.

Neck: soreness, stiffness, swelling

Heart, lung: rapid heart rate, chest pain, shortness of breath, chronic cough

Abdomen: pain, constipation, diarrhea, bleeding

Kidneys: back pain, burning and stinging while urinating, increased urination, history of urinary tract infections

Genital: itching, burning, discharges, pain

Extremities: muscle or joint weakness or pain, swelling

Skin: easy bruisobility, change in skin color, dryness, itching

out for cheerleading, dating the basketball star are the dreams of many teenage girls. The adolescent who is small or has delayed pubertal development may be unable to compete. Worse yet, he or she may be the object of ridicule by peers. A sensitive insecure teenager may become introverted and depressed. It is quite appropriate for a family to seek guidance from their physician.

The physician then has several important functions. First and foremost he will assess the teenager's health and determine if there is a significant medical problem. As we discussed previously this involves an excellent history, review of systems, family history and physical examination. Growth data must be considered. Appropriate diagnostic tests may be ordered. In most cases this evaluation will reveal a healthy child with no specific complaints whose physical examination and laboratory data are entirely normal. The physician will discuss with the teenager these results and make some predictions about future growth and development.

A certain percentage of these teenagers are small and have always been small. Their degree of pubertal development is normal for their age and peer group. They have been growing at a normal rate year after year. If the physician were to examine an x-ray of the hand and wrist (bone age) he would determine that the growth centers were normally developed for age. This patient most likely is normal and has no significant medical illness. He will be a short adult. In presenting this information to a family and teenager the physician must be reassuring that there is no underlying medical problem. Often the patient will be satisfied with the evaluation and relieved that there is nothing seriously wrong. Sometimes the information is reassuring but disappointing. The patient and family may have to confront unpleasant facts. Their son may not be tall enough to be a star basketball player or their daughter may be too short to be a prima ballerina. In the long run this information will allow the patient and family to come to grips with reality and adjust long term goals appropriately.

With many teenagers the situation may be somewhat different. They may have a normal history, review of systems and physical examination. Their pubertal development may be delayed for their age and in fact they may appear much younger than their stated age. The growth centers on the hand x-ray may show a significant delay in development. Once again reassurance is in order. There is no medical abnormality. Development is somewhat delayed but otherwise normal and the teenager will continue to grow taller long after his or her peers have ceased growing. In this case the final adult stature may be quite acceptable. It will simply take the patient longer to reach his final adult height. This information may be quite reassuring but it is important to be sensitive to the teenager's emotional adjustment to his delayed pubertal development. He may be miserable, being teased constantly at school and suffering feelings of inadequacy and rejection. This teenager may require support from family and sensitive friends. The physician must continue to follow the patient's growth and development carefully to make sure that they progress normally and to offer reassurance. Occasionally, a normal teenager may be sufficiently delayed and distressed by this state that hormonal therapy to help "speed things up" must be considered.

Most patients with "short stature" have no serious medical problem, require minimal laboratory evaluation and can be reassured. When should parents and physicians worry then? Any child with significant complaints, such as frequent headaches, easy fatiguability, shortness of breath, chronic abdominal pain, painful or frequent urination, etc. requires attention. Although hormonal abnormalities are an uncommon cause of growth failure, they must be considered. Several major hormones controlling growth and development are produced in the pituitary gland located at the base of the front part of the brain just behind the bony plate of the nose and close to the optic nerves controlling vision. Any enlargement of the pituitary due to a tumor or cyst may interfere with growth by interrupting the normal supply of pituitary hormones. These tumors may produce other symptoms as well, due to the pressure of the enlarged gland on surrounding brain structures. Vision may be impaired. The child may develop significant headaches sometimes associated with vomiting. The child may begin urinating and drinking excessively because of the tumor's pressing on structures that control the body's water balance. Therefore any symptoms of visual impairment, dizziness, headaches, or excessive urination in a child whose growth has slowed cannot be ignored.

A slowing of growth may be the first clue that a brain tumor is present. If diagnosed early enough, these tumors may be successfully cured before any other problems develop. Unfortunately if visual problems are present from an expanding tumor, they might not be reversible — obviously, the sooner the diagnosis is made the better. The growth failure is most often due to destruction of the brain cells that produce various growth-promoting hormones. Hormonal therapy can be provided so that growth continues once the tumor is properly treated.

An underactive thyroid gland is a common childhood problem that is easily treated. In past years newborns with an absent or underdeveloped thyroid gland suffered varying degrees of brain damage and in many cases severe irreversible mental retardation if their condition was undetected in the first several months of life. Now all newborn infants are screened for an underactive thyroid gland before discharge from the hospital so that therapy can be initiated very early and serious brain damage can be averted. Sometimes a normal thyroid gland will become underactive during childhood or adolescence. Brain damage will not occur, but slowing of growth may be the only clue. This is easily treated with thyroid hormone, a small pill given once daily.

Speaking of hormones, there are some common misconceptions about what hormones will or will not do. Growth hormone has received quite a bit of publicity lately. In the past supplies have been limited so that it has been available only for those patients who do not produce enough growth hormone themselves. Due to research and new techniques, the supply of growth hormone will soon increase. Pediatric endocrinologists are concerned that this hormone will be used inappropriately in every short patient or in every child who would like to be just a bit taller. There is no doubt that this drug works in

children who are deficient in their own growth hormone. It is uncertain if it will significantly alter the final adult height in children who are not growth hormone deficient. This is a powerful hormone which has many other effects in addition to stimulating growth and may have very serious side effects if used inappropriately.

The role of hormones in the treatment of obesity is frequently misunderstood. Obesity is a common and serious medical problem in our society. Although it is often related to excessive caloric intake, there is no question that over-eating is not the entire story either. Pediatricians see many obese children whose mothers are convinced that there is a hormonal problem. It is usually quite easy to rule out a hormonal problem because hormonal imbalances that cause obesity also cause poor statural growth. Examination of growth data is therefore essential in evaluating obesity. It is important that the physician consider hormonal abnormalities in any child who gains excessive weight and grows poorly.

Nutrition in our culture is a frequently discussed topic in medical circles. We have become concerned about the link between what we eat and the common diseases of our time. Mothers of children who have growth problems are often convinced that too much junk food and not enough vegetables are the source of the problem. Inadequate caloric intake is a rare cause of growth failure in our society. In developing nations, malnutrition may be severe enough to stunt growth. The poor in our country may be limited in their ability to provide adequate nourishment for their children's statural growth. Among our teenagers, fad diets and self-induced vomiting may be associated with growth failure due to malnutrition in extreme cases. Pediatricians are becoming familiar with anorexia nervosa, an eating disorder noted in disturbed adolescent females who think themselves obese even in an emaciated state. These serious medical conditions may lead to death from malnutrition if not recognized and treated. These are extreme cases, however. Too much junk food may not be good for our overall health, but it is not the cause of poor growth in a child.

Do not take for granted the health of your child. Today we understand more about our bodies than ever before. Once fatal or debilitating diseases can now be easily treated. The physician is trained to provide well child care, to give immunizations and, if possible, to diagnose any underlying illness and begin therapy early. Normal growth during childhood and adolescence is a good clue that your child's body is functioning normally and it is important that your physician have an opportunity to monitor your child's growth at yearly intervals as part of a routine examination. You should ask to see your child's growth curve and, if you are concerned about your child's growth, you must discuss this with your physician. Make sure you get answers that make sense to you. If not, seek a second opinion. Your child deserves it.

The North Carolina Arthritis Program

John McCain, M.D.

Arthritis — A Major North Carolina Health Problem

Arthritis in its various forms is the most wide-spread crippling, disabling and frequently the most painful of all the chronic diseases in North Carolina. More than 743,000 North Carolinians have one or more of the hundred various types of arthritis; approximately 150,000 have rheumatoid arthritis, 375,000 have osteoarthritis, and at least 2,500 children have juvenile arthritis. Today the prevalence of arthritis among children is higher than that of polio during the most severe epidemics in the past. Arthritis is the second leading cause of disability and the second most frequent reason for visits to physicians' offices. Thirteen thousand individuals in North Carolina are partially or totally disabled with arthritis.

Awareness

Despite the magnitude of the problem, arthritis has not received high priority in comparison to other diseases in North Carolina. Because of the complexities of the problem, isolation of those in need, despair of the patient, and the broad range of local services needed, a coordinated community approach is required. Rising costs, increasing longevity, increasing numbers of patients involved, and heightening expectations make the desirable treatment of arthritis ever more difficult. Newer methods of treatment involving medications, physical therapy and surgery, including the replacement of irreversibly damaged joints with artificial joints, have greatly improved the management for most types of arthritis in recent years. There are critical shortages of services, facilities and properly trained health professionals in our state for adequate treatment, care, education, and rehabilitation programs — with the needs for these services greatest in local communities.

State Program

In response to leadership from informed public, professional, state officials and the Arthritis Foundation, the 1979 General Assembly created an Arthritis Program for the State with appropriations of $200,000 per year (reduced to $164,455 in the 1981 budget cutback). As required in the legislation, an Arthritis Advisory Committee was appointed by Dr. Sarah Morrow, Secretary of the Department of Human Resources. After the benefit of much input solicited from individuals and professional organizations across the state interested in arthritis, a Five Year Arthritis Plan outlining the approach to the problem was prepared by the Advisory Committee and approved by the North Carolina Statewide Health Coordinating Council. The plan includes the following 5 goals:

1. to improve health professional education in arthritis;
2. to improve and expand patient and public arthritis education in North Carolina;
3. to develop and coordinate community arthritis services in North Carolina;
4. to expand arthritis research in North Carolina; and
5. to establish arthritis data collection and epidemiology systems.

This Statewide Comprehensive Arthritis Plan was the first in the nation and has been acclaimed as a model for the rest of the country. Annual implementation plans are prepared each year to assure relevance to needs, impact evaluation, and cost effectiveness.

Progress

Projects funded include the following:

(1) A study was undertaken to help determine the extent and distribution of the arthritis problem in North Carolina.

(2) Initially, major program support was given to the medical schools for professional continuing education for community physicians and others to inform them of the new medical knowledge in arthritis and assist them in implementing local programs.

(3) Funds since then have been used mostly to support model community programs as "seed projects," with priority given to those in areas of greatest need that also have self sustaining potential. Currently these projects include 16 counties with a total population of 1,375,000.

As of mid-1983, 62% of the objectives in the Five Year Statewide Arthritis Plan have been fully or partially completed with a target date for completion of 90% of the plan in FY 83-84. A revision of the 5 year plan will then be undertaken. The existence of this planned coordinated approach toward meeting the arthritis problems in North Carolina was helpful in attracting the recently awarded grant to establish the Multipurpose Arthritis Center Program at the UNC Chapel Hill Medical School.

Local Implementation Approach Stressed

Arthritis is different from many other illnesses in that sufferers frequently have limited mobility. It is important that services be accessible locally. Under physician supervision a team approach in the community is desired that frequently utilizes other health professionals such as nurses, physical therapists, occupational therapists, recreation therapists and vocational rehabilitation counsellors. This team concept is well-accepted and is already in use in University Medical and Rehabilitation Centers. Existing community services are to be augmented and expanded.

Current Plans

Operating with the limited arthritis program funds available, project proposals for communities are considered only on a one-year basis with the possibility of an additional year of funding. It is desirable that funded projects be geographically representative of the state with higher priority given to underserved areas. Only project proposals from nonprofit agencies are considered. Projects must be cost effective and must be coordinated with and utilize existing resources. Evidence of support of the project by the local county medical society is a prerequisite.

Physician Involvement Essential

Since primary care physicians provide most of the care for arthritis patients across the state, their involvement and leadership in the program are vital to its success. More physician participation is desirable. Since physicians are most knowledgable about the health needs in an area, they can help initiate projects, assist in their completion and assure continuation of the expanded services after the project is completed. The project can also help physicians by enhancing the availability of orthopedic and rheumatology consultations and services in the community. Projects help practicing physicians in making available for their patients local services such as physical therapy, occupational therapy, and arthritis visiting nurse services.

Information about the program can be obtained from:

1. NC Chapter of the Arthritis Foundation, Box 2505, Durham, NC 27705. 1-800/672-0949.
2. NC Department of Human Resources, Division of Health Services, Adult Health Services Section, P. O. Box 2091, Raleigh, NC 27602. 919/733-2775.

WARTS

Claude S. Burton, M.D., Peter Heald, M.D., and J. Lamar Callaway, M.D.

Even the healthiest among us is vulnerable to skin growths known as warts. In fact, most people can attest to personal experience with warts and offer innumerable treatments to fellow sufferers. Only the common cold and perhaps hiccoughs have a list of therapies as extensive and often as ineffective.

Warts are the product of epidermal cells infected with virus. Fifteen closely related viruses in the Papova family of viruses have been identified as being responsible for the various types of warts. We rarely know which virus is responsible for a given wart. Since wart behavior is often a function of location, this is how they are described. Thus, warts on the bottom of the foot are known as plantar warts, warts on the genitals are known as genital or venereal warts, and so fourth. These tumors are benign, though evidence is accumulating that warts of the genitalia may be associated with carcinoma of the cervix in women. Wart behavior is unpredictable. Why some warts persist and others disappear is unknown.

Genital or venereal warts, known to the dermatologist as condyloma accuminata, are increasingly common and are now the most common sexually transmitted disease we treat. Unlike herpes, which is contagious only episodically, the person with genital warts is constantly contagious, and therefore the risk of infection is high. Also, non-sexual spread of genital warts is often seen. Unlike other warts, genital warts respond to topical podophyllin. An extract of the mayapple tree, podophyllin is applied in tincture of benzoin so the medicine will stick to the wart. The podophyllin is a caustic; it works by tissue destruction. We start with a 25% concentration to be left on for six to eight hours and then washed off with soap and water. Since there is tissue destruction, there may be considerable discomfort at the site of application. A second or third treatment (sometimes more) is often necessary. The interval between treatments is critical. Four to six weeks is the rule, which is usually long enough to heal from the first treatment but not long enough for the wart to return to original size. In resistant cases the concentration of podophyllin is increased to 50% or greater, and the frequency of application may be increased.

Unfortunately, podophyllin is not effective against non-genital warts but other caustics are of value. Some are non-prescription (Compound W, salicylic acid plasters) while other more potent caustics require professional application (cantharadin, trichloracetic acid, bichloracetic acid) or prescription (Duofilm). All of these topical treatments are destructive.

Surgery is often effective, although the warts are as prone to recurrence as with any of the simpler topical treatments. The same may be said of freezing the warts with liquid nitrogen or other super-cooled gases. Newer techniques with laser surgery appear to be more effective than most, especially for intractable plantar warts.

Spontaneous clearing is commonplace with warts of all varieties. It is this tendency that makes retrospective evaluation of any therapy difficult to interpret. We have seen many patients clear with the power of suggestion and we do not discount this approach. Every physician should add the element of suggestion to any treatment approach.

When caustic, surgical, and suggestive treatments fail, immunotherapy may work. The idea here is to take advantage of the host immune system in wart removal. Warts painted with allergic substances (poison ivy extract for example) will become involved in the allergic reaction that results, often eradicating the wart in the process. Immunotherapy appears to hold great promise for warts since it is potentially specific. That is, only the wart is destroyed, leaving healthy adjacent tissue intact. Recently, trials with interferon, a biologically active molecule made by white blood cells, have shown dramatic success when administered by injection. It is hoped that this approach will help those who have not been relieved by the best efforts of dermatologists and sorcerers.

Dr. Wiley Forbus — The Third Hopkins Man to Cast His Lot With Davison and Duke

Bernard F. Fetter, M.D., Joachim R. Sommer, Ph.D., Donald B. Hackel, M.D., William W. Johnston, M.D., Carl Bishop

DR. Wiley D. Forbus was the third faculty member to be selected for the new medical school in Durham, North Carolina. The first was Dr. Wilburt C. Davison, the dean. The second was Dr. Julian D. Hart.

The first autopsy was performed on a borrowed stretcher. A photograph taken at the time shows Dr. Forbus assisted by two pathology residents. The patient had died of hemorrhagic pancreatitis with a stone in the common duct. The department was small. When I first encountered pathology as a student in 1942, the senior staff consisted of Drs. Forbus, Douglas Sprunt, and Roger D. Baker. The pathology course was a half-day every day for six months. The class of about 76 students would assemble for a lecture and then separate into four groups for the laboratory portion of the course. At regular intervals the instructional staff changed groups so that by the end of the course each instructor was known by and knew each student. It was very easy after such prolonged exposure for the faculty to evaluate the students. There was no attempt at precise evaluation but simply high pass, pass, or low pass.

The majority of the students received a pass. High pass or low pass were reserved for those students who clearly distinguished themselves in a positive or negative way.

Dr. Forbus prided himself on not giving examinations. Certainly they were unnecessary under the teaching system he instituted. He did have a session with the students which he called a "roundup" which could be a rather traumatic experience. He would call a group of four students from the class, apparently at random, to occupy four seats in what was the pathology amphitheater. By this time, a large autopsy room had been equipped with two tables centrally positioned in a horseshoe-shaped bank of seats. The four students occupied chairs just beyond the autopsy tables and Dr. Forbus began what he called a discussion. The four students were encouraged to participate by direct questioning. The sessions lasted one hour. The entire class relaxed while four students perspired. Each student dreaded being called and was happy when his turn had passed.

Dr. Forbus experienced a successful moose hunt in Canada. It is purported that after he had shot the moose he immediately performed an autopsy to determine the cause of death. The autopsy established that he had, in fact, killed the moose. The head and rack were prepared by a taxidermist and thereafter occupied a prominent position on the wall of Dr. Forbus's office.

When students were not performing well during the course, Dr. Forbus invited them into his office for a chat. He tried to determine whether the problem was one of insufficient application, a poor return on time spent, a personal problem, or a personality conflict with the instructor. His interest was genuine. Some of the students referred to this experience as "going under the moose." There was a similar concern for the faculty and staff.

Upon arriving in the department each morning, via the morgue elevator, Dr. Forbus entered the autopsy room. The prosector who was working had best know what he was doing. He would then proceed to his office and don his white coat with the large safety pin to replace the button. There would then follow a complete tour of the department during which he greeted and chatted with everyone. In this way he was attuned to what was happening in the department.

One day, Dr. Forbus mentioned to me that he would not appoint a senior resident who had not had the equivalent of 4½ years training in anatomic pathology. I replied that the American Board of Pathology required only 4 years total training to be eligible for examination. His answer was that he was training people to be pathologists, not to take examinations. Because of this rule, I became a senior resident with Dr. Oscar Duque, after we had both received Board certification.

Dr. Forbus's training program strongly emphasized anatomic pathology. Residents rotated alternately between autopsy and surgical responsibilities. Everyone in the program was required to participate in teaching. The most junior intern was assigned a lecture. All lectures were given in the autopsy room with the chairman in attendance. At one stage, a tape recorder was introduced so that you could listen to and criticize your lecture later. Dr. Forbus participated in the criticism because he was convinced that effective lecturing was essential to learning. I remember clearly his comment after my first lecture. It was succint: "Dr. Fetter, it didn't go very well, did it?" I thoroughly agreed.

In the anatomic program, the autopsy service received priority. He personally reviewed every case at the Thursday night conference. This conference began at 7:30 p.m. and rarely terminated before 11:00 p.m. The presentation of each autopsy was followed by Dr. Forbus's dictation of a final microscopic note. After conference, many of the participants went to a local beer establishment on Erwin Road to relax and Dr. Forbus went home to rest. Surgical pathology was of lesser interest to him since there was an inherent resistance to making a diagnosis on a small piece of tissue. When he went to the operating room and asked for more tissue, the surgeon would occasionally ask, "Wiley, what do you want, the entire body?" To which he would

Dr. Wiley D. Forbus

reply, "That would be helpful."

About clinical pathology he cared little. He would arrange such a program for anyone who wished it but he did not encourage it. Clearly, it was his primary interest to train residents in anatomic pathology with the expectation that they would become teachers in medical schools. His teaching philosophy is probably best exemplified in his introduction to the student workbook in Pathology. It is quoted here in its entirety.

"OBJECTIVES OF THE COURSE IN GENERAL PATHOLOGY"

"The course of instruction detailed in this syllabus is designed with the purpose of attaining the following objectives:

"1. To create for the student a dynamic, functional conception of disease, which he is encouraged to see as a biologic process affecting the individual as a whole.

"2. To facilitate the student's acquisition of a comprehensive and practical working knowledge of basic pathologic processes as they occur in the disease entities to which they are related.

"3. To aid the students in the development of that clear understanding of common disease entities which naturally result from the study of their evolution from simple basic pathologic processes.

"4. To develop a point of view on the part of the student which emphasizes the meaning of pathologic anatomic states, rather than their particular morphologic characteristics.

"5. To encourage the student to develop a projectional type of thinking which involves the correlation of physical, chemical, physiologic, and clinical data as these data pertain to a given pathologic anatomic state.

"6. To encourage the student to develop a feeling of personal responsibility for his own instruction.

"7. To create an atmosphere of practical reality during the process of studying the nature, causation, and types of disease, and thus make it apparent to the student that he is immediately concerned with the study of medicine, and is not merely taking a course in a related subject."

These objectives are significant in that, in many cases, for the first time, the student is told that he and not the instructor alone is responsible for his education. This served to introduce the student to the fact that for the rest of his life while practicing medicine, it was his responsibility to continue to learn. He must recognize his own deficiencies and correct them.

On only a single occasion can I recall becoming annoyed by Dr. Forbus's action. This was the year prior to his retirement. At the end of the course he had what we referred to as the "Last Roundup." He said that he was going to do something he had never done before in his teaching career. There were five students who had done so poorly that he was going to call them down and make an example of them. In wonderment, I looked at George Margolis and he looked at me. Each of us wondered how we could correct this extreme departure from normality. The five students were called. They immediately ran from the room but returned with musical instruments. Under the name of "Fungus Five," they played such ditties as "The Yellow Rose of Creedmoor," "Muscle and Blood," "Four Foot Seven," and "The Turkey Song." Dr. Forbus thoroughly enjoyed it.

When the new chairman arrived, Dr. Forbus said he would teach no more because it was now a new department and the new chairman should feel free to do whatever he wished without interference. Thus a unique and illustrious era came to an end.

Those of us fortunate enough to have served under him are grateful for his influence on our lives and careers.

—Bernard F. Fetter, M.D.

Forbus was a very formal person, much as the British are. There were things proper and there were things improper or, actually, *not* proper. That I believe determined much of what he did in life and how he came across to others. There was something liturgical about the conduct of his affairs: the regular visits every morning to his staff, the Roundup, the Thursday night conference, the CPCs. He had a great sense of form.

I was intern at the Pathology Institut in Munich, Germany when I first heard of Forbus and Duke. A berry aneurysm had been discussed at the autopsy conference and reference was made to the work that Forbus had performed while studying in Munich under Borst many years earlier. In 1958 I went to see Forbus for a position in his department. He was sitting behind his famous horseshoe desk on wheels and after a long chat I was hired with these words: "Dr. Sommer, I think I'll try you."

I told Forbus I wanted a research career in pathology. He replied that as long as I was living up to my responsibilities as a teacher I could do what I pleased and he would go out of his way to help me. The next year I was unhappy with my salary increase, pointing out that due to the incredibly small number of senior staff I had not had an opportunity to even begin research and that therefore, at a minimum, I was not going to sacrifice on salary. Although fully aware of the somewhat incongruous reasoning on my part, Forbus told me that he was going to support my request because opportunity for research had been part of our original deal. He would fight it out with Dean Davison. I did get the money but in the process also incurred the permanent wrath of Dr. Davison.

Forbus made an arrangement for me to work with a fulltime investigator, Dr. Joe Beard, except during teaching sessions. I was relieved of my duties as autopsy supervisor. Forbus told me with a twinkle in his eyes that he would keep paying me because, as he put it, he would not relinquish the power of the purse, not even to Beard. Forbus told me that he saw a great need for pathologists with research training of a more substantial kind than he could provide himself and, moreover, that had been our agreement in the first place.

His devotion to Duke (and his country) was absolute, almost transcendental in its perceived meaning. Yet he was not parochial. Duke always remained to him an accumulation of people in search of clarity and clarifications, if not truth, which he held to be always elusive if only for lack of a reference point. He ardently defended the definition of the university: *Universitas literarum*, the universe of letters. I venture to say that his response to the Nixon library battle would have been that the failure to accept authenticated letters, whatever their origin, is to abandon the very mission of a university.

He was from Mississippi. He would not accept blacks as his equals. But there was no hate in the man nor envy — ever! Although he understood and supported, *de jure*, the then beginning drives for equality, he made a plea not to be asked to take part in a struggle the manifestations of which were most disagreeable to him. Nevertheless, his response to that period of American history was much subdued as compared with that of many others in our community. The reason for that was that his very life style was dominated by the principle of *audiatur et altera pars:* listen to the other side too. He always listened. Although the arguments he heard were at odds with his convictions steeped in tradition, he would never allow his convictions to prevent his listening to the arguments.

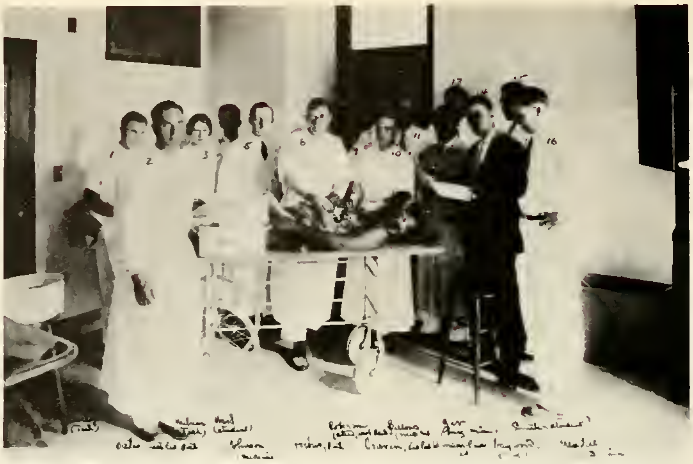
He was utterly fascinated with and loved machines, believe it or not. He once told me that there was nothing more beautiful than a well-made car. He marvelled at the way the windows glide, the engine purrs (he had a Lincoln) and all that jazz. At the same time he would get unbelievably irritated when things did not work, especially when things like projectors broke down.

He never brought up the subject of art or the theater. Indeed, he was ignorant of the fact that the picture of Virchow in his office (now, I believe, part of the Trent collection) was in fact the original by Lieberman, a famous German painter. It is said to be the closest likeness of Virchow extant and by now should be worth a fortune. It needs some restoration, as it was torn across one corner. Forbus did not recall how that happened or where.

Then there is his textbook. In one of our chats he wondered out loud whether or not he should rewrite the two volumes for a second edition of "Reaction to Injury." But he rejected the idea even as he brought up the prospect. For one, he realized the enormity of the task which he really did not feel ready to cope with. No doubt about that. But what kept him from writing the second edition was that he felt, however diffidently, that there was really nothing to be added to the essence of the book. For he never wrote the book as a reference work to begin with. His aim had been clarity in formulating the principles of approaching the solution of medical, not merely patho-anatomical, problems. Nothing could be added to the exposition of those principles. Indeed, as he told me, he considered as the culmination of his academic efforts the formulation of the concept of disease as reaction to injury. He was especially enamored of his circle diagram which he conceived as a shorthand for that concept. He told me once that all he had learned about disease was right there in this diagram. Rewriting those two volumes, to him, would amount to filling in details which he thought should be relegated to the handbooks.

Before Forbus finally stepped down, he called me in and gave me his pointer which we all knew so well from his Thursday conferences. In fact, the painting of Forbus hung in the Forbus library on the third floor showed him with the pointer and the slide projector. There was a celebration of Forbus when he had come back from Indonesia at a time when I was in Heidelberg at the Max Planck Institut on my sabbatical. I asked Bill Johnston to take the pointer, have it silvered like little baby shoes are silvered, and engraved with an inscription for the occasion and thus return it to its owner. I think the Forbus family still have it.

Perhaps unfortunately I am rather blunt and, as Kempner once admonished me in the hall, too ambitious. I give Forbus credit that he never took offense, because I am aware of this habit myself. Indeed, I recognize this as a cultural trait, German vs. American. The quiet acceptance of that trait in others, however, reflects on the grace of the tolerance which I believe was an essential feature of Forbus's character. Forbus was a leader of men, because he



The first autopsy at the Duke University School of Medicine, August 5, 1930. 1. Carl Bishop, autopsy technician; 2. Dr. Max Oates, assistant resident in pathology; 3. Eleanor Milnor, histologic technician; 4. Needham Ward, student; 5. Dr. Christopher Johnson, medicine; 6. Dr. Wiley D. Forbus, professor of pathology; 7. Edith Robinson, student assistant in pathology; 8. Dr. Spikes, visiting physician; 9. Dr. Robert Reeves, professor of radiology; 10. Dr. Earl Craven, resident in pathology; 11. Dr. Bellows, intern in surgery; 12. Dr. Oscar Hansen-Pruss, medicine; 13. Dr. Louis Ziv, intern in surgery; 14. Dr. Haywood, visiting surgeon; 15. Mr. Smith, visiting student; 16. Dr. Magill, intern in surgery.

had no problems to muster the courage to reject the unfit. Forbus had a magnificent receptor for the phony and his reaction to phony people was instantaneous! He did not suffer fools gladly. He was within reason unimpressed by certificates, degrees, honors, diplomas, recommendations when it came to judge a man. He tried him or her first, just as he said when he hired me.

I do respect Forbus more than many a person I have met in life, and I did like to share his company more than that of many a person I have met. I respect him, for he was NOT phony. He was an honest man who intuitively knew that the deity does not tolerate the presumption that all can be manipulated, as Kissinger recently observed. Those are rare men.

—Joachim R. Sommer, Ph.D.

I can add only a minor postscript to Dr. Fetter's very interesting recollections of Dr. Forbus. I arrived at Duke in 1960, about one month prior to the arrival of Dr. Thomas Kinney who was to be the new chairman. At that time, Dr. Forbus still conducted the Thursday night conferences which were continuing in their usual format. They really lasted all evening — from 7:30 until the cases were completely discussed, which was often almost until midnight; and I was impressed by the careful scrutiny given to the details of each case by the senior staff and especially by Dr. Forbus himself. Although Dr. Forbus seemed to me to be appropriately critical of the presentations by the house officers, I was told that this was a much "mellower" Forbus than in the past, when the experience of presenting a case at the Thursday night conference was looked at with some degree of terror by the younger house staff members. Several of the senior staff recall the rigor of this experience but this was said with some pride. They commented on how they were thus encouraged not only to improve their anatomic technique and analytical thinking but also to polish up and perfect their methods of presentation.

Dr. Forbus was true to his resolution not to interfere with the new chairman's plans. He had some obvious difficulty in doing this since he could not hide his intensely personal feelings of identification with the department that he had built from its origin. For this reason he accepted a two-year appointment in Indonesia as a consultant to the medical school there so that the new chairman would have this time to develop his own plans for the department, free of Dr. Forbus's influence. When Dr. Forbus returned to Duke in about 1967 he was easily available to the house officers and staff for discussions either philosophical or scientific. He was a wonderful resource for the department and continued to contribute to the education of the many house officers and staff people by his willingness to share his deep and sophisticated knowledge of pathology. I often took advantage of his interest in teaching, bringing him puzzling and interesting cases which he enjoyed studying with me and to which he often supplied an interpretation which I had overlooked.

Dr. Forbus came of a generation of distinguished academic pathologists that included men like Howard Karsner, Frank Mallory, W. G. MacCallum and S. B. Wolbach. He clearly belonged in this group and deserved the many honors and awards that he received in his lifetime.

—Donald B. Hackel, M.D.

On July 8, 1946, an autopsy was performed at Duke that was destined to become famous. It resulted in the description of what was considered to be a new disease and the isolation of a new organism which was believed to be a new species of *Nocardia*. It was named *Nocardia intracellularis*. Later it was found that this organism was the famous Battey bacillus and the organism was later named *Mycobacterium intracellularis* in honor of its original description at Duke. Forbus commented on the finding in this patient in a presentation to the North Carolina Society of Pathologists who met on Saturday evening, January 20, 1973. The illness was caused by a then unidentified acid-fast bacillus now named *Mycobacterium intracellularis*. Forbus summarized in his own words many of the thoughts about what he considers pathology to be all about:

"There are no notes made by me on the case at any time during the studies. My first contact with it was in consultation with our surgical pathology resident staff following the several biopsies early in the clinical studies. At the time of this consultation I recognized the possible granulomatous nature of the lesion and, observing the fine hematoxylin granulation of the large 'foamy' cells which composed the lesion, suggested extensive special staining studies to determine the nature of these granules. The result of this suggestion was the discovery of the massive acid-fast parasitism, the unique feature of this case and the starting point of the intensive studies by Dr. Cuttino and Miss McCabe. It was my good fortune to work with Dr. Cuttino throughout his investigation, a full report of which was published in the *American Journal of Pathology*, volume 25, page 1, 1949, after having been presented at the Chicago meeting of the American Association of Pathologists and Bacteriologists in 1947.

"So much for the history of the discovery of this new disease, other cases of which to my knowledge have not been reported to date. However, some years ago in consultation I saw in an excised lymph node from a Canadian case a lesion which was identical with that in our case; as far as I know this case was never followed by definitive studies and I have no further knowledge of it.

"Why all this labor and cost — time, money, worry, frustration, and what have you? As pathologists what meaning does a single case of an extremely rare disease have for us? In these materialistic pragmatic times with almost everybody in a great hurry to 'get done with it before breakfast in the morning,' a few relevant observations without elaboration may be provoking and perhaps helpful:

"1. The case calls for a re-examination of our conceptions of the basic nature of that widely misunderstood pathological process which we call granuloma.

"2. The study brings into focus the pressing need for a detailed understanding of the intracellular biochemical mechanisms which make possible the symbiotic biologic situation characteristic of intracellular parasitism, a condition of exceptional importance in our struggle to understand the immensely complex environmented relationship which is basically what disease is.

"3. The case emphasizes the fact that there exists in our external environment a considerable number of organisms of as yet little understood but unquestionable pathogenic importance for man, the emergence of their pathogenic potential simply awaiting alteration of individual internal environments favoring their realization.

"4. Pathologists, students of disease, who are prepared and are willing to pay the price of painstaking and imaginative work can still make a creative contribution to understanding of disease which is in essence an individual himself acting in a certain way. The definitive studies of this case stimulated a special interest in the possible evocation of disease by other acid-fast so-called 'non pathogenic' species known to exist widely in the external environment and not infrequently found in the internal environment of man; the result of this was a series of studies of these organisms and related species by members of our department following publication of this case.

"5. A final generalization: Pathologists who are willing to delegate to technicians their responsibility for postmortem studies, a procedure which currently is growing in practice, abdicate their birthright and will make little or no contribution to the advancement of our knowledge of disease, and hence to their own medical education and our medical profession."

—William W. Johnston, M.D.

Dr. Davison notified the principal of my high school that Duke had some openings for graduating students. Five of us applied and I was assigned to Forbus. He sent me to Hopkins to learn how a pathology unit worked. I began a 45-year association with Duke.

Soon after my appointment, 15 60-gallon oaken barrels containing pathologic specimens arrived from Hopkins. I quickly learned a lot about cataloging and about the smell of formaldehyde.

Forbus was interested in forensic pathology and his services were in demand by insurance companies to determine whether double indemnity clauses were activated by the manner of death. This led to autopsies in the home on the kitchen table and in a number of other unusual places. Forbus wrote and had a large hand in the passage of the legislation which resulted in the demise of the coroners and the instigation of our medical examiner system.

The number of specimens from Duke Hospital was not sufficient for an active pathology department. Forbus arranged to have the Duke Pathology department supply surgical pathologic services to all hospitals in North and South Carolina who were recipients of grants from the Duke Endowment. This allowed small hospitals to be certified by the American Hospital Association. This service began in 1935 and continued through 1944.

Duke opened in a period of depression and money was spent frugally. Davison signed every requisition. If one ordered a dozen pencils, he had to turn in 12 pencil stubs before the order was approved. There was a continuing struggle between Dave and Forbus over money for the department. Bodies for autopsies were in short supply and were obtained from Lincoln and Watts hospitals.

Forbus knew every member of the department and at Christmas each was remembered by a gift. In my case, it was war bonds for my children.

—Carl Bishop

From the Department of Pathology, Duke University Medical Center, Durham 27710.

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MEDICAL EDUCATION

The Evolution of a Rural EMT-Intermediate Training Program

Joseph E. Williamson, M.D., Sandra S. Landis, R.N., M.I.C.N., and E. Jackson Allison, Jr., M.D./M.P.H.

THE delivery of prehospital emergency care in the United States has undergone a rapid and extensive evolution during the last twenty-five years.[1] As recently as two decades ago, in many areas of our country prehospital "emergency care" consisted entirely of the local funeral home hearse and attendants responding to emergency calls as best they could with essentially no skills except to "load and go."[2] Subsequently, the basic level emergency medical technician (EMT) programs were developed providing volunteer personnel with skills in extrication, immobilization, transport, the ABCs, and cardiopulmonary resuscitation. Employing more sophisticated rescue vehicles and techniques, the basic level EMT has become the linchpin of prehospital care in many rural areas of our country.

More recently, paramedic programs have trained personnel who add a new dimension to prehospital emergency care, especially in urban areas. Paramedics afford the populations they serve a much broader spectrum of life-and-limb-saving skills than can basic EMTs. However, the training of paramedics and maintenance of a paramedic program in a community is an extremely expensive enterprise and, for many areas, not particularly cost-effective.

During the last decade the concept of an intermediate emergency medical technician has come to the forefront to span the gap between the basic EMT with his limited skills and the proficient, highly-trained yet expensive paramedic. Depending upon the geographic area and the training and skills involved, these new personnel have been designated intermediate emergency medical technicians (EMT-I), trauma technicians, cardiac techs and a variety of other titles.

A recent national survey undertaken by the Department of Emergency Medicine of East Carolina University School of Medicine revealed that 31 of 40 responding states acknowledge that they have some sort of intermediate level training program underway. The number of training hours the states require above the basic EMT level is extremely variable, ranging from 30 to 200 hours. These intermediate programs are implemented through an array of institutions including local and community hospitals, technical and junior colleges, regional EMS offices and, rarely, medical schools.

In a recent review of the medical literature, the authors have noted a striking absence of information concerning the structure and content of these intermediate level training programs. In this paper we describe a model training program for intermediate emergency medical technicians in a predominantly rural area.

History

As recently as 1978 there was only one small intermediate emergency medical technician (EMT-I) squad with advanced life skills operating in eastern North Carolina; the remainder of this 29 county area with a predominantly rural population of 1.2 million people was served primarily by volunteer basic EMT rescue squads. There were, and to date still are, no paramedic providers in the area.

These rescue squads face tremendous logistical and geographic problems in transporting patients to any of the 26 hospitals in the region. Distances to hospital often necessitate transports of an hour or more and very commonly of at least 30 minutes. Transport nightmares experienced by the rescue squads can be staggering: a patient living in a small Outer Banks community such as Hatteras has to travel through three counties over 100 miles of winding two-lane roads to reach the nearest sponsor hospital.

During the latter part of the 1970s, the legislature of the state of North Carolina recognized the inadequate (and essentially non-existent) level of emergency medical services in the eastern 29 counties and mandated the newly-formed East Carolina University School of Medicine (ECUSOM) in Greenville to initiate and upgrade these services. Dr. William E. Laupus, Vice Chancellor and Dean of the Medical School, established an Emergency Medical Services (EMS) Project within the Department of Surgery in March 1978. Responsibility for the EMS Project was transferred to the ECU Department of Emergency Medicine in 1980.

The EMS Project Coordinator's initial efforts, in conjunction with a committee made up of ECUSOM faculty and area physicians, were to formulate a meaningful, workable EMT-I training curriculum and then to develop community, hospital and public support for the intermediate EMT program. During the last four years, over 250 EMT-Is have successfully undergone training through the EMS Project at ECUSOM.

Administrative Organization

The state of North Carolina through its Department of Human Resources and the Office of Emergency Medical Services (NCOEMS) (Table 1) is responsible for approving institutions involved in training EMT-Is, including technical or community colleges, hospital inservice programs or, as in eastern North Carolina, a medical school. The eastern 29 counties are divided by NCOEMS into four areas, each

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From the Department of Emergency Medicine, East Carolina University School of Medicine, Greenville 27834.

Table 1
North Carolina Emergency Medical Services Organization

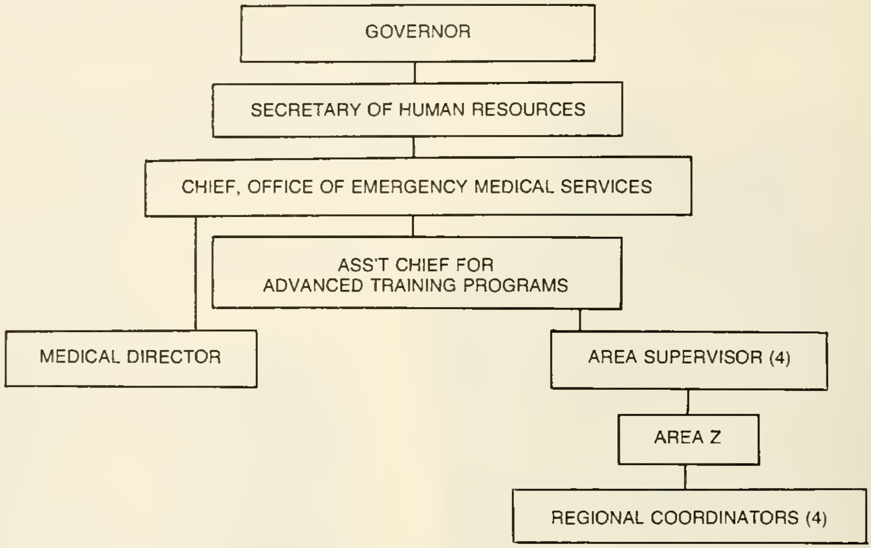
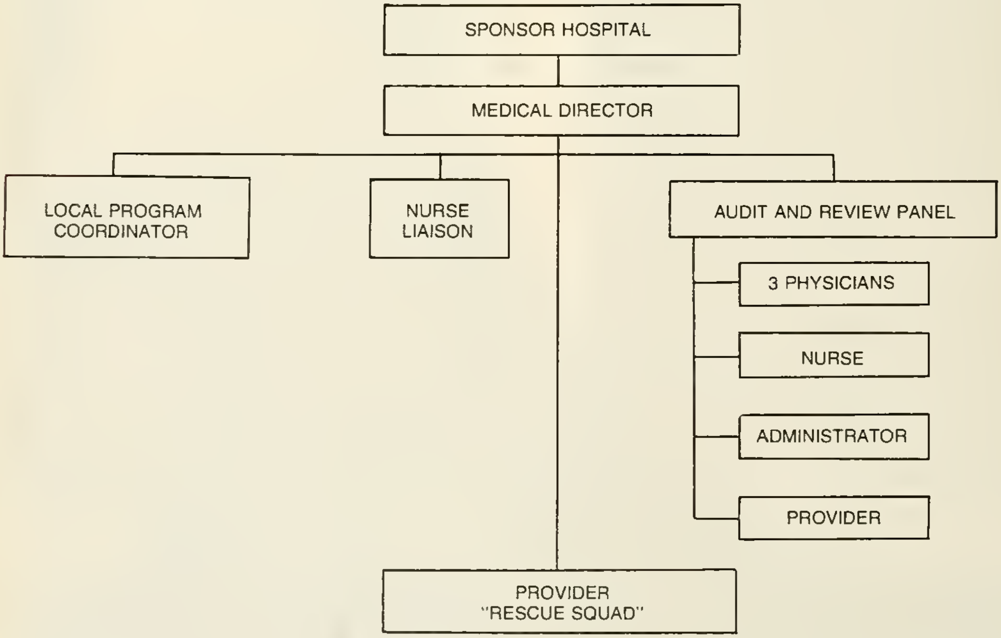

GOVERNOR
SECRETARY OF HUMAN RESOURCES
CHIEF, OFFICE OF EMERGENCY MEDICAL SERVICES
ASS'T CHIEF FOR ADVANCED TRAINING PROGRAMS
MEDICAL DIRECTOR
AREA SUPERVISOR (4)
AREA Z
REGIONAL COORDINATORS (4)

Table 2
Sponsor Hospital Organization of Advanced Life Programs



of which has a supervisor and four coordinators who regulate emergency medical service field operations. These individuals do not directly participate in the training program taught by the EMS Project but do interact with it on many levels.

NCOEMS has designated that EMT-I rescue squads must be under "medical control," and this medical direction is effectively and legally in the hands of a local "sponsor hospital" that has indicated an interest in becoming involved with the more advanced EMT-I programs. Presently, there are nine sponsor hospitals in the eastern region of North Carolina. These hospitals must petition NCOEMS in order to serve as the sponsor hospital for a specific rescue squad when the initial training proposal for that squad is submitted. To sponsor an EMT-I rescue squad a hospital must also provide 24-hour in-hospital emergency physician coverage.

A sponsor hospital, through its administration and board of directors, selects a medical director and an audit and review panel to oversee the ongoing activities of the rescue squad, both during training and once the squad is active in the field (Table 2). The medical director reviews all the squad's activities and ensures physician participation in the program. The audit and review panel usually consists of three physicians, one nurse, a representative from hospital administration and a member of the rescue squad. This panel reviews the squad's advanced life support (ALS) calls as well as its training needs on a regular basis. It essentially is the managerial body for the program. Another individual is designated as nurse liaison; this person coordinates education of the hospital nursing staff concerning the prehospital activities and capabilities of the rescue squad personnel. A local program coordinator is identified who provides a link between the rescue squad and the training institution and other agencies.

As noted earlier, the Department of Emergency Medicine of the East Carolina University School of Medicine provides the intermediate level training to the eastern region of the state through its Emergency Medical Services Project. The EMS Project actually contracts with the squad and sponsor hospital to undertake the training. A nominal $500 training fee is charged. Presently, the EMS Project Coordinator works with the medical director, with the nine sponsor hospitals, a core faculty of two full-time paid physician assistants (one of whom is paramedic trained) and 15 volunteer physician faculty members (Table 3).

Course Objectives

The long-range and overriding objective of the EMS Project's EMT-I course is to strengthen and upgrade the quality of prehospital care delivered throughout the eastern region of North Carolina. Since its inception in 1978, the project has attempted to reach this goal by providing rescue squads with a consistent, quality training experience taught by competent, experienced physicians and related health professionals.

A second objective is to incorporate advanced life support protocols into the course systematically in didactic and skills presentations. These protocols, which direct the use of ALS skills — venipuncture, administration of IV fluids, EOA/EGTA insertion, and MAST application (though not a true ALS skill) — have been previously approved by the North Carolina Office of EMS (Table 4).

Through the use of standardized curriculum and with a faculty intimately familiar with this curriculum, the project

Table 3
Emergency Medical Services Project Organization

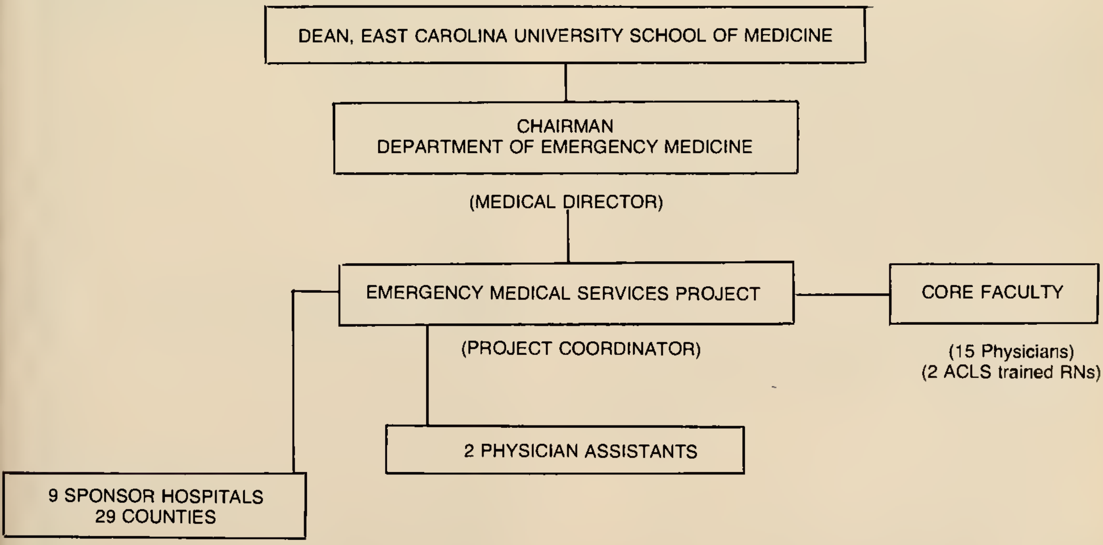


Table 4
EMT-Intermediate Advanced Life Skills

1. Venipuncture
   (IV fluid therapy)
   (Withdrawal of blood sample)
2. Esophageal Airway Insertion
3. MAST application

has attempted to integrate EMT-I training throughout the 29 counties and to unify ALS protocols throughout the region.

The fourth objective of the EMS Project is to provide continuing education to the area's EMT-I units in a systematic, acceptable manner. Intermediate EMTs in North Carolina need to complete 96 hours of continuing education every two years for recertification. Continuing medical education is presented at the local sponsor hospital and attempts are made to use local faculty who will address specific local needs and problems.

Course Content

To begin training as an EMT-I in North Carolina, an individual must be 18 years old, a North Carolina resident, a certified basic EMT, and he or she must be affiliated with a provider (Table 5). Having met these personal requirements, the individual's training course must be accredited by NCOEMS[3] and must contain approximately 30 hours of didactic work including modules 1, 2, 3, and 5 of the federal Department of Transportation's (DOT) paramedic training course.

In addition to these basic NCOEMS requirements, the EMS Project requires that EMT-I candidates have a high school diploma or the equivalent (GED); have completed one year of active experience as a basic EMT by the completion of the intermediate training program; have taken and passed a written pretest provided by the EMS Project; and have been recommended by the oral interview panel.

The concept of pretesting was developed for several reasons: (1) to serve as a quality control measure in the candidate selection process at the local level; (2) to assist the project faculty by providing some idea of the candidate's baseline knowledge; and (3) to facilitate the further development of an appropriate curriculum. As an adjunct to the pretesting process, each candidate is provided with a study guide at least two weeks prior to the test as well as a study outline that cites areas in the study guide from which test questions have been developed. The sole reference text utilized is *Emergency Care* (2nd edition), by Harvey Grant and Robert Murray, published by Robert J. Brady Company (1978).

The EMS Project also recommends that each candidate participate in a pre-course review which stresses emergen-

Table 5
North Carolina EMT-I Training Requirements

A. Training presented by "Approved Training Resource"
B. Required course: approximately 30 hours (excluding clinical) DOT modules 1, 2, 3, 5
C. Admission standards:
   1. 18 years old
   2. N.C. resident
   3. Currently certified as basic EMT in North Carolina
   4. Affiliated with a provider
D. Medical control through sponsor hospital

Table 6
EMT-I Training Curriculum

Topic	Hours
1. Registration	3
Professionalism and ethics	
Introduction to terminology and protocols	(1)
Legal aspects/role and responsibilities of the EMT-I	(2)
2. Introduction to biological systems	3
3. Cardiovascular system	3
4. Fluids and electrolytes — blood and its components	3
5. Learning lab — venipuncture	3
6. Respiratory system	3
7. Learning lab	
airway management	3
administration of oxygen	
airways: oropharyngeal, EOA/EGTA	
8. Review session	3
9. Mid-term examination	3
10. Shock	3
Review of hemorrhage control	
11. Learning lab — MAST	3
12. Assessment lecture #1	3
Primary and secondary surveys	
Vital signs	
Triage	
Reporting and documenting	
13. Assessment lecture #2	3
Musculoskeletal and peripheral nervous system	
Soft tissue injuries management	
Review of bandaging and splinting	
14. Assessment lecture #3	3
Neurological assessment and management	
Brief anatomy and physiology introduction	
Review of neck and spine immobilization techniques	
15. Assessment lecture #4	3
Medical emergencies — cardiopulmonary	
Brief anatomy and physiology review	
16. Review session	3
17. Assessment lecture #6 — surgical emergencies	3
Abdomen, vascular, ENT, eye, GYN — bleeding, ectopics	
18. Assessment lecture #7 — trauma emergencies	3
Chest, abdomen, maxillofacial	
19. Assessment lecture #8 — environmental emergencies	3
Bites, stings, anaphylaxis, drownings, contact poisonings	
20. Assessment lecture #9 (EMT recertification lecture)	3
Behavioral disturbances	
Alcohol and drug abuse	
Overdose	
Ingested poisonings	
21. Coping with stress, burnout	3
Death and dying	
22. BLS skills review	3
23. AHA CPR certification	3
24 Course review with ALS skills lab	3
25. Final exam	3
Didactic hours	75
Clinical hours	30
Total didactic/practicum hours, EMT-I component	105
Basic EMT recertification course component	27
	132
Certification exams —	3
ALS skills practical BLS skills practical	6
EMT-I written exam	
Total	141

cy medical technician theory and skill application. By combining participation in this review with the use of the study guide and the pretest, the candidate can begin the actual course with a modicum of confidence and direction.

The theoretical base for the project's EMT-I curriculum is developed from the DOT training course for paramedic education. As noted above, four (out of a possible 15) of the modules (1, 2, 3, 5) are recommended by the North Carolina Office of Emergency Medical Services as a basic course for the EMT-I level training. These four modules constitute approximately 30 hours of classroom instruction. The EMS Project curriculum includes these modules but has been expanded to provide 75 hours of didactic work (Table 6). These additional hours emphasize subjects such as the EMT-I's role and responsibility as a health care professional; medical terminology; and an anatomy and physiology review with particular regard to function and related pathologic states. A series of assessment lectures completes the didactic curriculum.

An additional 30 hours of supervised clinical experience is required of the EMT-I trainee. Attention is paid to "hands on" evaluation and opportunities are afforded in the classroom for additional practice of skills.

Venipuncture and fluid therapy (including blood products), and the procedure for withdrawing blood for the purpose of laboratory testing are discussed in conjunction with the management of circulatory impairment. Esophageal airway insertion, one of the three advanced skills taught under the EMT-I curriculum, is introduced as an airway management skill in the segment denoted as "Respiratory System." In this way, it can be properly correlated with regional anatomy, physiology, and pathology, and at the same time can be compared to other management options.

A fourth skill, Medical Anti-Shock Trouser (MAST) application, is included in the syllabus and is taught while the topic of shock is under consideration. Though MAST application is not specifically an ALS skill, it is our feeling that given the use of MAST in the presence of signs and symptoms of hypovolemic shock, the EMT-I should establish and maintain contact with the receiving emergency department when inflation is considered.

All the preceding skills are introduced, reviewed and demonstrated with required student classroom demonstration and subsequent peer and instructor critique. Classroom and clinical performance are documented on the preceptor skill sheets developed in conjunction with this program.

As stated earlier, the EMS project curriculum also requires 30 hours of clinical experience. Since the students need to have a supervised clinical experience in their home locale, a local clinical preceptor program has been designed. The purpose of this program is to assure orientation, theory review, demonstration, supervision, and documented measurement of skill expertise. This local preceptor program, therefore, (1) supplies needed flexibility (formulated checklists are detailed enough to provide area-wide continuity, but are flexible enough to allow the sponsor hospital's policies and procedures to be inserted); (2) allows adequate demonstration; (3) allows the student to work at his own pace in his home environment; (4) provides a quick means of reviewing the student's progress; (5) allows use of many individuals as preceptors, thus lessening the burden on any one individual; (6) promotes rapport and encourages understanding of the advanced-level EMT; (7) provides needed conformity among sponsoring agencies in the 29 county area.

Clinical areas that have been recommended for clinical experience specific to this program are (1) the operating room, (2) the emergency department, (3) the medical intensive care unit, and (4) the surgical intensive care unit. Further clinical opportunities can be afforded by assigning the student to a hospital IV team if available.

The project employs a multidisciplinary faculty to teach the EMT-I course. This faculty consists of volunteer physicians from both the East Carolina University School of Medicine as well as the local medical community, physician's assistants and specialist nurses. For each lecture, the faculty person is provided with a class curriculum outline as well as handouts that have been specifically developed for his or her topic. Appropriate evaluation of the faculty presentations is requested from the students.

The course material is presented in a variety of ways including traditional lectures, learning labs and seminars. Various audiovisual aids, simulations and models are used extensively. Quizzes are given randomly during the course on topics covered during previous class meetings. Midterm and final examinations are given at appropriate times in the training process. A practical skill examination under the supervision of the local medical director is given to the student body at the end of the training program. Examiners are members of the faculty and are, therefore, physicians and specialty nurses. Practical skill test results are documented employing checksheets similar to those utilized by the NCOEMS for EMT practical exams. Skills that are evaluated are (1) venipuncture for IV fluid therapy and withdrawing of blood samples, (2) esophageal obturator airway insertion, (3) medical anti-shock trouser (MAST) application and (4) multiple trauma assessment.

Experiences and Results

Between 1978 and 1982, the EMS Project of the Department of Emergency Medicine at the East Carolina School of Medicine trained over 250 new intermediate EMTs (96% of whom are volunteers) serving ten rescue squads in eight eastern North Carolina counties. During this same period five classes including over 100 EMTs have been recertified. Presently, the EMS Project is in the midst of training the first paramedic squad in this area of the state, and six new EMT-I classes are planned throughout the region in 1983.

The ten EMT-I rescue squads trained by the EMS Project all utilize the same ALS pre-hospital treatment protocols and share a uniform training and continuing education experience as well as standardized audit, testing, and evaluation mechanisms. This has led to improved regional communications between rescue squads, sponsor hospitals and local participating physicians and other support personnel.

Historically, initial efforts by the EMS Project staff were directed toward educating local physicians and hospital administrators as well as nurses and other support staff to the abilities and needs of the intermediate EMT. Hospitals had to be willing to accept responsibility and liability for the new EMT-I rescue squads, and local physicians and paraprofessionals also had to be willing to become actively involved in the training and on-going activities of the squads. Through this participation, local communities within the broad geographic region have learned to communicate and cooperate with each other in the delivery of pre-hospital care.

Furthermore, area physicians instrumental in ALS programs participate in a forum which meets on a quarterly basis. These meetings provide an avenue for open discussion of problems and needs, both locally and regionally within the scope of the 29 county EMS system.

The EMS Project's unique EMT-I training curriculum has evolved over the last five years through constant feedback from recently trained EMT-Is, local physicians, nurses and administrators as well as the EMS Project faculty in order to ensure a pertinent teaching syllabus.

Comments

The efforts of the East Carolina University School of Medicine's EMS Project to train intermediate EMTs in the rural 29 county area of eastern North Carolina during the past five years has led to an improvement in the delivery of prehospital emergency care to the local population. During 1983 the Department of Emergency Medicine, in conjunction with the EMS Project, will undertake a prospective study of the impact of these EMT-Is and their ALS skills throughout the region.

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3. N.C. State Board of Medical Examiners: Certification Requirements — EMT-Intermediate: Subchapter 32H — Mobile Intensive Care. *North Carolina Administrative Code* 32-58, 59, 1980.

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INDICATIONS: For the treatment of the symptoms of seasonal and perennial allergic rhinitis and vasomotor rhinitis, including nasal obstruction (congestion).
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WARNINGS: Caution patients about activities requiring alertness (e.g., operating vehicles or machinery). Antihistamines are more likely to cause dizziness, sedation, and hypotension in elderly patients. Patients should also be warned about the possible additive effects of alcohol and other CNS depressants.
Usage in pregnancy: Safe use in pregnancy has not been established. Use only when the potential benefits have been weighed against the possible hazards to the mother and child. Note that an inhibitory effect on lactation may occur.
PRECAUTIONS: Use with caution in patients with a history of bronchial asthma, increased intraocular pressure, hyperthyroidism, cardiovascular disease, hypertension, hiatal hernia with reflux esophagitis, intestinal atony of the elderly or debilitated intestinal obstruction, myasthenia gravis, renal function impairment, and ulcerative colitis (severe).
Drug Interactions: MAO inhibitors, Alcohol or CNS depressants, especially anesthetics, barbiturates, and narcotics.
ADVERSE REACTIONS: Prolongs the response to nervous stimulation, potentiates the response to norepinephrine, and inhibits the response to tyramine.
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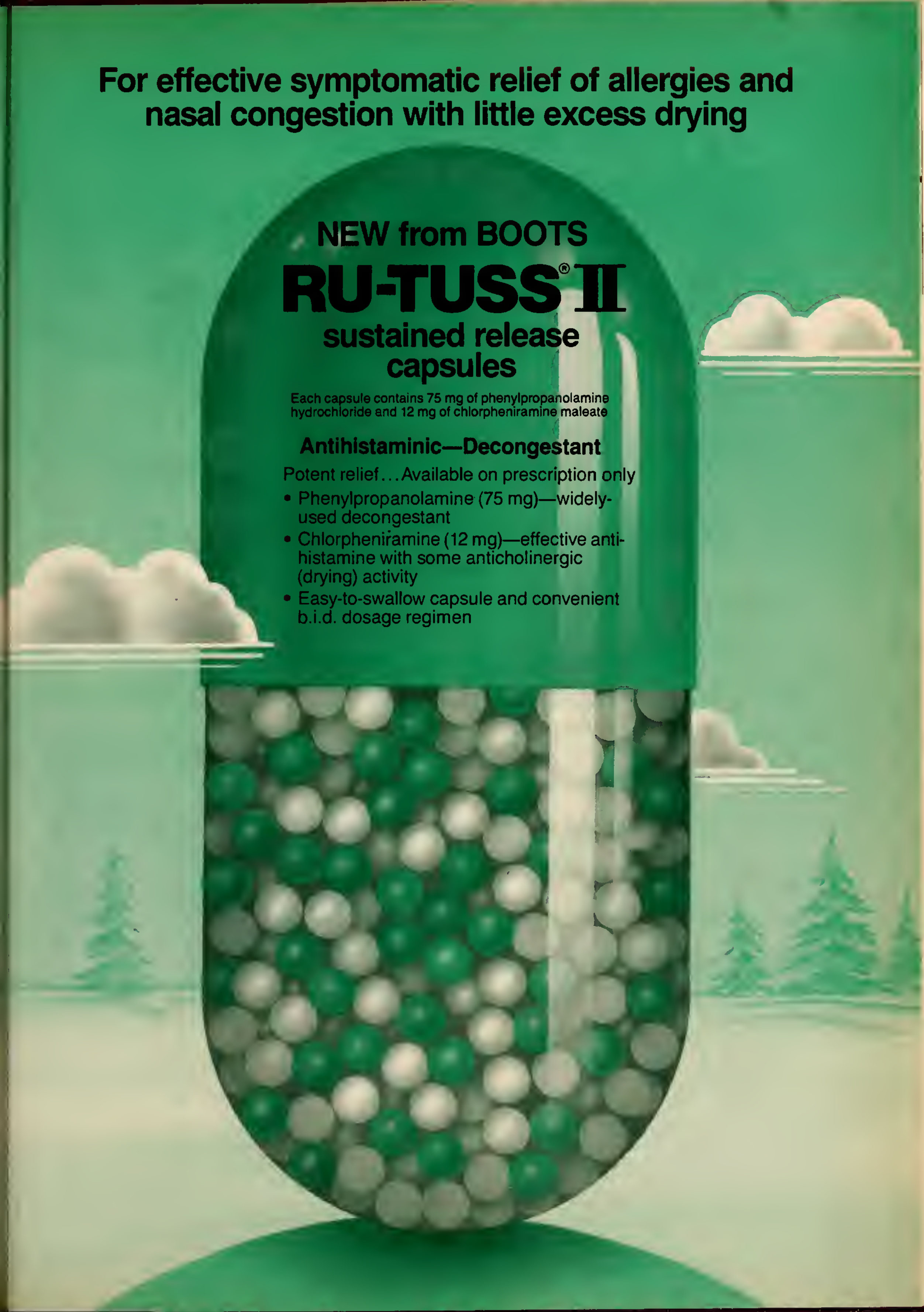

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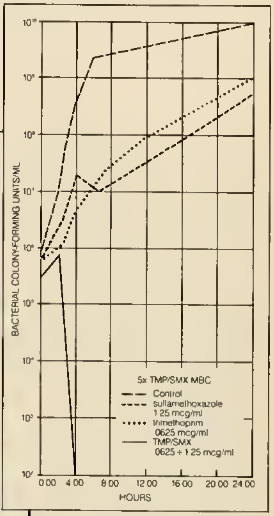
BACTRIM	**96%** 328,598	**89%** 63,551	**93%** 62,691	**84%** 4174	**91%** 4381	**88%** 1736	**96%** 7326	**92%** 11,856
ampicillin	72% 345,209	5% 65,466	85% 67,338	16% 4381	70% 4402	10% 1775	9% 7759	11% 12,091
cephalexin[†]	81% 343,339	85% 67,031	92% 67,027	16% 4398	80% 4365	22% 1834	13% 7571	12% 11,846
nitrofurantoin	97% 307,785	65% 61,162	7% 59,775	13% 3848	14% 3059	67% 1707	60% 7109	67% 10,830

[†] Analogous to cephalothin, the primary antibiotic disc used in testing.
Source: The Bacteriologic Report, BAC-DATA Medical Information Systems, Inc., Winter Series, 1981-82.
Numbers under percentages refer to the projected number of isolates tested.

RAPID *IN VITRO* DESTRUCTION OF *E. COLI**



Kill curve kinetics of Bactrim and its individual components against *E. coli in vitro.*[1]

The bactericidal action of Bactrim has been demonstrated *in vitro* on laboratory strains of *E. coli*[1,2] and on clinical isolates of *E. coli, Klebsiella-Enterobacter, Proteus mirabilis* and *Morganella morganii*[3]—the most common causative organisms of urinary tract infections.[4] More than 100 published studies attest to the efficacy of Bactrim in recurrent urinary tract infections due to these organisms.[5] In comparative studies with other antimicrobials, Bactrim has consistently demonstrated unsurpassed efficacy during therapy.[6-11]

Resistance to Bactrim develops more slowly than to either of its components alone *in vitro.** Among urinary tract isolates, resistance has rarely emerged in susceptible strains.[5,12] Bactrim is contraindicated in pregnancy at term, during lactation, in infants less than two months old and in documented megaloblastic anemia due to folate deficiency.

Initial episodes of uncomplicated urinary infections should be treated with a single-agent antimicrobial.

Bactrim™ DS

(trimethoprim and sulfamethoxazole/Roche)

b.i.d. *for recurrent urinary tract infections*

**In vitro* data do not necessarily predict clinical results.

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See next page for references and a summary of product information.

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Bactrim™ DS

(trimethoprim and sulfamethoxazole/Roche)

Before prescribing, please consult complete product information, a summary of which follows:

Indications and *Usage*: For the treatment of urinary tract infections due to susceptible strains of the following organisms: *Escherichia coli, Klebsiella-Enterobacter, Proteus mirabilis, Proteus vulgaris, Proteus morganii.* It is recommended that initial episodes of uncomplicated urinary tract infections be treated with a single effective antibacterial agent rather than the combination. *Note* The increasing frequency of resistant organisms limits the usefulness of all antibacterials, especially in these urinary tract infections

For acute otitis media in children due to susceptible strains of *Haemophilus influenzae* or *Streptococcus pneumoniae* when in physician's judgment it offers an advantage over other antimicrobials. To date, there are limited data on the safety of repeated use of Bactrim in children under two years of age. Bactrim is not indicated for prophylactic or prolonged administration in otitis media at any age.

For acute exacerbations of chronic bronchitis in adults due to susceptible strains of *Haemophilus influenzae* or *Streptococcus pneumoniae* when in physician's judgment it offers an advantage over a single antimicrobial agent.

For enteritis due to susceptible strains of *Shigella flexneri* and *Shigella sonnei* when antibacterial therapy is indicated.

Also for the treatment of documented *Pneumocystis carinii* pneumonitis.

Contraindications: Hypersensitivity to trimethoprim or sulfonamides; patients with documented megaloblastic anemia due to folate deficiency; pregnancy at term, nursing mothers because sulfonamides are excreted in human milk and may cause kernicterus; infants less than 2 months of age

Warnings: BACTRIM SHOULD NOT BE USED TO TREAT STREPTOCOCCAL PHARYNGITIS. Clinical studies show that patients with group A β-hemolytic streptococcal tonsillopharyngitis have higher incidence of bacteriologic failure when treated with Bactrim than do those treated with penicillin Deaths from hypersensitivity reactions, hepatocellular necrosis, agranulocytosis, aplastic anemia and other blood dyscrasias have been associated with sulfonamides Experience with trimethoprim is much more limited but occasional interference with hematopoiesis has been reported as well as an increased incidence of thrombopenia with purpura in elderly patients on certain diuretics, primarily thiazides Sore throat, fever, pallor, purpura or jaundice may be early signs of serious blood disorders Frequent CBC's are recommended; therapy should be discontinued if a significantly reduced count of any formed blood element is noted

Precautions: *General* Use cautiously in patients with impaired renal or hepatic function, possible folate deficiency, severe allergy or bronchial asthma In patients with glucose-6-phosphate dehydrogenase deficiency, hemolysis, frequently dose-related, may occur. During therapy, maintain adequate fluid intake and perform frequent urinalyses, with careful microscopic examination, and renal function tests, particularly where there is impaired renal function. Bactrim may prolong prothrombin time in those receiving warfarin; reassess coagulation time when administering Bactrim to these patients *Pregnancy* Teratogenic Effects Pregnancy Category C Because trimethoprim and sulfamethoxazole may interfere with folic acid metabolism, use during pregnancy only if potential benefits justify the potential risk to the fetus

Adverse Reactions: All major reactions to sulfonamides and trimethoprim are included, even if not reported with Bactrim *Blood dyscrasias.* Agranulocytosis, aplastic anemia, megaloblastic anemia, thrombopenia, leukopenia, hemolytic anemia, purpura, hypoprothrombinemia and methemoglobinemia *Allergic reactions* Erythema multiforme, Stevens-Johnson syndrome, generalized skin eruptions, epidermal necrolysis, urticaria, serum sickness, pruritus, exfoliative dermatitis, anaphylactoid reactions, periorbital edema, conjunctival and scleral injection, photosensitization, arthralgia and allergic myocarditis *Gastrointestinal reactions* Glossitis, stomatitis, nausea, emesis, abdominal pains, hepatitis, hepatocellular necrosis, diarrhea, pseudomembranous colitis and pancreatitis *CNS reactions:* Headache, peripheral neuritis, mental depression, convulsions, ataxia, hallucinations, tinnitus, vertigo, insomnia, apathy, fatigue, muscle weakness and nervousness *Miscellaneous reactions:* Drug fever, chills, toxic nephrosis with oliguria and anuria, periarteritis nodosa and L E. phenomenon. Due to certain chemical similarities to some goitrogens, diuretics (acetazolamide, thiazides) and oral hypoglycemic agents, sulfonamides have caused rare instances of goiter production, diuresis and hypoglycemia in patients; cross-sensitivity with these agents may exist In rats, long-term therapy with sulfonamides has produced thyroid malignancies

Dosage: ***Not recommended for infants less than two months of age.***

URINARY TRACT INFECTIONS AND SHIGELLOSIS IN ADULTS AND CHILDREN, AND ACUTE OTITIS MEDIA IN CHILDREN

Adults: Usual adult dosage for urinary tract infections—1 *DS* tablet (double strength), 2 tablets (single strength) or 4 teasp (20 ml) b.i.d for 10-14 days Use identical daily dosage for 5 days for shigellosis.

Children: Recommended dosage for children with urinary tract infections or acute otitis media—8 mg/kg trimethoprim and 40 mg/kg sulfamethoxazole per 24 hours, in two divided doses for 10 days Use identical daily dosage for 5 days for shigellosis

For patients with renal impairment: Use recommended dosage regimen when creatinine clearance is above 30 ml/min. If creatinine clearance is between 15 and 30 ml/min, use one-half the usual regimen Bactrim is not recommended if creatinine clearance is below 15 ml/min.

ACUTE EXACERBATIONS OF CHRONIC BRONCHITIS IN ADULTS

Usual adult dosage 1 DS tablet (double strength), 2 tablets (single strength) or 4 teasp (20 ml) b.i.d for 14 days

PNEUMOCYSTIS CARINII PNEUMONITIS

Recommended dosage: 20 mg/kg trimethoprim and 100 mg/kg sulfamethoxazole per 24 hours in equal doses every 6 hours for 14 days See complete product information for suggested children's dosage table.

Supplied: *Double Strength (DS) tablets*, each containing 160 mg trimethoprim and 800 mg sulfamethoxazole, bottles of 100 and 500, Tel-E-Dose® packages of 100, Prescription Paks of 20 *Tablets*, each containing 80 mg trimethoprim and 400 mg sulfamethoxazole—bottles of 100 and 500, Tel-E-Dose® packages of 100, Prescription Paks of 40 *Pediatric Suspension*, containing 40 mg trimethoprim and 200 mg sulfamethoxazole per teaspoonful (5 ml); cherry flavored—bottles of 100 ml and 16 oz (1 pint) *Suspension*, containing 40 mg trimethoprim and 200 mg sulfamethoxazole per tea spoonful (5 ml), fruit-licorice flavored—bottles of 16 oz (1 pint)

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1. Stone PH Turi ZG, Muller JE Efficacy of nifedipine therapy for refractory angina pectoris *Am Heart J* 104 672-681 September 1982
2. Antman E, Muller J, Goldberg S, et al Nifedipine therapy for coronary-artery spasm Experience in 127 patients *N Engl J Med* 302 1269-1273, June 5, 1980

BRIEF SUMMARY

PROCARDIA® (nifedipine) **CAPSULES** For Oral Use

INDICATIONS AND USAGE I. Vasospastic Angina PROCARDIA (nifedipine) is indicated for the management of vasospastic angina confirmed by any of the following criteria 1) classical pattern of angina at rest accompanied by ST segment elevation 2) angina or coronary artery spasm provoked by ergonovine or 3) angiographically demonstrated coronary artery spasm In those patients who have had angiography the presence of significant fixed obstructive disease is not incompatible with the diagnosis of vasospastic angina provided that the above criteria are satisfied PROCARDIA may also be used where the clinical presentation suggests a possible vasospastic component but where vasospasm has not been confirmed, e g where pain has a variable threshold on exertion or in unstable angina where electrocardiographic findings are compatible with intermittent vasospasm or when angina is refractory to nitrates and or adequate doses of beta blockers

II. Chronic Stable Angina (Classical Effort-Associated Angina): PROCARDIA is indicated for the management of chronic stable angina (effort-associated angina) without evidence of vasospasm in patients who remain symptomatic despite adequate doses of beta blockers and or organic nitrates or who cannot tolerate those agents

In chronic stable angina (effort-associated angina) PROCARDIA has been effective in controlled trials of up to eight weeks duration in reducing angina frequency and increasing exercise tolerance but confirmation of sustained effectiveness and evaluation of long-term safety in those patients are incomplete

Controlled studies in small numbers of patients suggest concomitant use of PROCARDIA and beta blocking agents may be beneficial in patients with chronic stable angina but available information is not sufficient to predict with confidence the effects of concurrent treatment especially in patients with compromised left ventricular function or cardiac conduction abnormalities When introducing such concomitant therapy care must be taken to monitor blood pressure closely since severe hypotension can occur from the combined effects of the drugs (See Warnings)

CONTRAINDICATIONS Known hypersensitivity reaction to PROCARDIA

WARNINGS Excessive Hypotension. Although in most patients the hypotensive effect of PROCARDIA is modest and well tolerated occasional patients have had excessive and poorly tolerated hypotension These responses have usually occurred during initial titration or at the time of subsequent upward dosage adjustment and may be more likely in patients on concomitant beta blockers

Severe hypotension and or increased fluid volume requirements have been reported in patients receiving PROCARDIA together with a beta blocking agent who underwent coronary artery bypass surgery using high dose fentanyl anesthesia The interaction with high dose fentanyl appears to be due to the combination of PROCARDIA and a beta blocker, but the possibility that it may occur with PROCARDIA alone with low doses of fentanyl, in other surgical procedures or with other narcotic analgesics cannot be ruled out In PROCARDIA treated patients where surgery using high dose fentanyl anesthesia is contemplated, the physician should be aware of these potential problems and if the patient s condition permits sufficient time (at least 36 hours) should be allowed for PROCARDIA to be washed out of the body prior to surgery

Increased Angina Occasional patients have developed well documented increased frequency duration or severity of angina on starting PROCARDIA or at the time of dosage increases The mechanism of this response is not established but could result from decreased coronary perfusion associated with decreased diastolic pressure with increased heart rate or from increased demand resulting from increased heart rate alone

Beta Blocker Withdrawal: Patients recently withdrawn from beta blockers may develop a withdrawal syndrome with increased angina probably related to increased sensitivity to catecholamines Initiation of PROCARDIA treatment will not prevent this occurrence and might be expected to exacerbate it by provoking reflex catecholamine release There have been occasional reports of increased angina in a setting of beta blocker withdrawal and PROCARDIA initiation It is important to taper beta blockers if possible rather than stopping them abruptly before beginning PROCARDIA

Congestive Heart Failure. Rarely patients usually receiving a beta blocker have developed heart failure after beginning PROCARDIA Patients with tight aortic stenosis may be at greater risk for such an event

PRECAUTIONS. General Hypotension Because PROCARDIA decreases peripheral vascular resistance, careful monitoring of blood pressure during the initial administration and titration of PROCARDIA is suggested Close observation is especially recommended for patients already taking medications that are known to lower blood pressure (See Warnings)

Peripheral edema: Mild to moderate peripheral edema, typically associated with arterial vasodilation and not due to left ventricular dysfunction, occurs in about one in ten patients treated with PROCARDIA This edema occurs primarily in the lower extremities and usually responds to diuretic therapy With patients whose angina is complicated by congestive heart failure, care should be taken to differentiate this peripheral edema from the effects of increasing left ventricular dysfunction

Drug interactions: Beta-adrenergic blocking agents (See Indications and Warnings) Experience in over 1400 patients in a non-comparative clinical trial has shown that concomitant administration of PROCARDIA and beta-blocking agents is usually well tolerated but there have been occasional literature reports suggesting that the combination may increase the likelihood of congestive heart failure severe hypotension or exacerbation of angina

Long-acting nitrates PROCARDIA may be safely co-administered with nitrates but there have been no controlled studies to evaluate the antianginal effectiveness of this combination

Digitalis Administration of PROCARDIA with digoxin increased digoxin levels in nine of twelve normal volunteers The average increase was 45% Another investigator found no increase in digoxin levels in thirteen patients with coronary artery disease In an uncontrolled study of over two hundred patients with congestive heart failure during which digoxin blood levels were not measured, digitalis toxicity was not observed Since there have been isolated reports of patients with elevated digoxin levels it is recommended that digoxin levels be monitored when initiating adjusting and discontinuing PROCARDIA to avoid possible over- or under-digitalization

Carcinogenesis mutagenesis impairment of fertility When given to rats prior to mating nifedipine caused reduced fertility at a dose approximately 30 times the maximum recommended human dose

Pregnancy Category C Please see full prescribing information with reference to teratogenicity in rats embryotoxicity in rats, mice and rabbits and abnormalities in monkeys

ADVERSE REACTIONS. The most common adverse events include dizziness or light-headedness peripheral edema nausea weakness headache and flushing each occurring in about 10% of patients transient hypotension in about 5% palpitation in about 2% and syncope in about 0 5% Syncopal episodes did not recur with reduction in the dose of PROCARDIA or concomitant antianginal medication Additionally the following have been reported muscle cramps nervousness dyspnea nasal and chest congestion diarrhea constipation inflammation joint stiffness shakiness sleep disturbances blurred vision difficulties in balance dermatitis pruritus urticaria fever sweating chills and sexual difficulties Very rarely introduction of PROCARDIA therapy was associated with an increase in anginal pain possibly due to associated hypotension

In addition more serious adverse events were observed not readily distinguishable from the natural history of the disease in these patients It remains possible however, that some or many of these events were drug related Myocardial infarction occurred in about 4% of patients and congestive heart failure or pulmonary edema in about 2% Ventricular arrhythmias or conduction disturbances each occurred in fewer than 0 5% of patients

Laboratory Tests Rare mild to moderate transient elevations of enzymes such as alkaline phosphatase CPK LDH SGOT, and SGPT have been noted and a single incident of significantly elevated transaminases and alkaline phosphatase was seen in a patient with a history of gall bladder disease after about eleven months of nifedipine therapy The relationship to PROCARDIA therapy is uncertain These laboratory abnormalities have rarely been associated with clinical symptoms Cholestasis possibly due to PROCARDIA therapy has been reported twice in the extensive world literature

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While this patient's experience is representative of many unsolicited comments received, not all patients will respond to Procardia nor will they all respond to the same degree.

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"My doctor switched me to PROCARDIA[*] *as soon as it became available. The change in my condition is remarkable."*

"I shop, cook and can plant flowers again."

"I have been able to do volunteer work...and feel needed and useful once again."

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Side effects are usually mild (most frequently reported are dizziness or lightheadedness, peripheral edema, nausea, weakness, headache and flushing, each occurring in about 10% of patients, transient hypotension in about 5%, palpitation in about 2% and syncope in about 0.5%).

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[*] Procardia is indicated for the management of:
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2) Angina where the clinical presentation suggests a possible vasospastic component.
3) Chronic stable angina without evidence of vasospasm in patients who remain symptomatic despite adequate doses of beta blockers and/or nitrates or who cannot tolerate these agents. In chronic stable angina (effort-associated angina) PROCARDIA has been effective in controlled trials of up to eight weeks' duration in reducing angina frequency and increasing exercise tolerance, but confirmation of sustained effectiveness and evaluation of long-term safety in these patients are incomplete

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J-9043-4 July 1981

MEDICAL EDUCATION

Training Psychiatrists for Public Service in North Carolina

William B. Hunter, M.D., M.P.H., and James W. Osberg, M.D.

THOMPSON et al.[1] have recently documented a decline in the utilization of state mental hospitals as sites for training of psychiatric house officers. Their data show North Carolina as being one of the states having the greatest decline in psychiatric residents being trained in state hospitals. This decrease in training for residents in state hospitals in North Carolina, for both U.S. and foreign medical graduates, in the period 1975-1980 is 65%. Their data further show that in the same time frame the number of U.S. graduates being trained decreased from a total of five trainees to four and the number of foreign trained graduates decreased from twenty-nine to eight.* The authors note the need for training psychiatrists in this public sector for both patient care and research.

In North Carolina there is a demonstrated relationship between where a house officer receives training and where that individual elects to practice medicine. This is exemplified in the Area Health Education Center (AHEC) program which has been successful over the last decade in helping to correct the maldistribution of physicians in the State. The authors believe that the same situation holds for psychiatry as for medicine in general. That is, the training site and setting are important factors in determining where the psychiatrist will practice following completion of a given training program. The training site will influence the resident's choice of practice setting, e.g., public or private. One can arrive at such a conclusion by considering the role models to which the residents are exposed (that is, respected senior teachers) during the course of residency training when the new physician is forming and then consolidating his or her identity as a psychiatrist.

In this paper, the authors will describe a program providing residents in psychiatry with learning experiences in the theories and practice of administrative psychiatry and their application to public psychiatry. We will provide data demonstrating that while there may have been an overall decline in residents receiving psychiatric training in the four public state hospitals, the combined UNC-Dix Psychiatric Residency Program is one clear exception to the decline. Finally, data will be presented demonstrating that a number of psychiatrists trained in such a program have elected to practice either full or part time in the public sector.

Background

From its founding in 1952, the Department of Psychiatry, School of Medicine, Chapel Hill, has had as a major goal the training of psychiatrists for service in North Carolina. This goal has been reflected in the development of a joint training program for psychiatric residents and medical students in conjunction with Dorothea Dix Hospital in Raleigh. Dorothea Dix is a state hospital serving the southeastern part of the state but also providing a number of state-wide functions including medical, surgical, and forensic services.

Since the mid-sixties, the program at Chapel Hill has provided specialized training in community psychiatry through seminars and through placement of advanced residents in supervised community sites. The potential scope of this public psychiatry program was considerably broadened with the combination of the Dorothea Dix and UNC psychiatry training programs in 1974. During the past three years, there has been a revision of this effort through an emphasis upon the administrative practice of psychiatry. We have seen this concentration as useful in particular for those psychiatrists who may assume clinical executive roles.

Since 1952, 297 residents have graduated from the combined UNC-Dix training program. Of these graduating residents, 50% are practicing in some area of public psychiatry and 43% are practicing psychiatry in North Carolina. The influence of the UNC training program on the public sector of psychiatry in the State may easily be seen. In fact, the first Commissioner of Mental Health in the state has been a senior faculty member since leaving his position. He was replaced later as Commissioner by another key UNC-Dix faculty member. Furthermore three of the subsequent Directors/Commissioners of Mental Health were graduates of the Chapel Hill program and a fourth was a graduate of the School of Business Administration at UNC, Chapel Hill.

In considering the magnitude of the problem of preparing psychiatrists for service in the state, it is useful to review certain demographic data. There are currently 611 psychiatrists licensed to practice in North Carolina. Information from the state mental health program reveals that there are 137 full-time and 95 part-time and consulting psychiatrists employed by state and local mental health

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* (These data do not reflect the impact of combining in 1974-1975 the residency training program of the Department of Psychiatry, University of North Carolina, Chapel Hill with the program of Dorothea Dix Hospital, Raleigh training ten to fifteen residents every year.)

From the Department of Psychiatry, UNC School of Medicine, Chapel Hill, NC 27514.

programs. Two hundred and thirty-two psychiatrists are employed in the public sector at present. Thirty-eight percent of the psychiatrists licensed to practice in the state, therefore, are employed full-time or part-time in public mental health programs. In addition, since psychiatrists tend to use employment in the public sector as a bridge to private practice, the number of psychiatrists having had some public service in their careers is greater than any cross-sectional view would reveal.

In summary:

Psychiatrists licensed in state	611
Psychiatrists employed full or part time in the public sector	232
% of psychiatrists in state employed full or part time in public sector	38%
Graduates UNC, UNC-Dix Training Program	297
% of Graduates UNC-Dix Training Program employed full or part time in public sector	50%

Program Description

Since its inception as a division in the Department of Psychiatry, the Division of Community Psychiatry has been responsible for developing an interface between the Department of Psychiatry and community mental health centers (CMHC) in the state of North Carolina. In the early years of the development of the community mental health centers, the Department through the Division actively supported developing centers. This was done through the utilization of needs assessment studies for the new centers, program consultation and joint workshops with the CMHCs, and the placement of house officers from the Department of Psychiatry in various centers during their third or fourth year of post-graduate training.

As the CMHCs in this state have become more firmly established, the Department of Psychiatry through the Division has modified its program to be able to continue to meet both the educational needs of house officers in Psychiatry and the state's needs for psychiatrists trained to work in the area of public psychiatry, an area including but not limited to CMHCs. In order to meet these changing needs, the program has been modified over the past three years in the following manner. Rather than having the resident's only exposure to public psychiatry come in the last year of training, a "ribbon" has been developed running through the four years of the resident's training. This begins in the first year as a resident support group run by two faculty members. Through this group experience the resident is placed in a supportive situation where it is possible to look at the work environment beyond the heavy clinical demands of the first year. As the resident moves into the second year of training, there is a course in group dynamics. This course deals with group dynamics both from the perspective of group psychotherapy and from the perspective of the need to understand group dynamics in order to function effectively in any organization.

In the third year, the resident attends a series of ten to twelve seminars on administrative organization and theory. This series is both didactic in its use of various journal articles on the theory of administration and experiential through focusing the theory on the resident's specific work situation. (There is a continuation of this course at a more sophisticated level during the resident's fourth year seminar series on administrative psychiatry.) With this background, the resident should be better prepared to understand and appreciate the complexities of the public psychiatry experience during the last year of training.

The public sector experience during the last year of training consists of a didactic seminar series beginning several weeks prior to the resident's initiating contact with a community mental health center or other public sector field site where the resident will be working during the year. The seminar series continues for several weeks following the resident's initiation of the field site work. During the resident's experience at the field site, the resident is assigned a faculty member from the Division of Community Psychiatry as a supervisor. The resident also has a second supervisor at the field site. The two groups of supervisors meet twice a year to evaluate the program and address any problems that may have arisen from the perspective of either the site itself or the Department of Psychiatry. For those residents whose interest in public psychiatry is determined early in their training, a fellowship program in administrative psychiatry to occur during the resident's fourth year of training is now under consideration.

Finally, beyond the level of residency training the Department recognizes a commitment to public and community psychiatry at the postgraduate continuing education level. There is a seminar series each spring for psychiatrists who wish to prepare for the board examinations in Administrative Psychiatry. This series has run for two years now, having an enrollment of fourteen psychiatrists during the first year and eighteen psychiatrists during the second year. With a few exceptions, all of the participants in this course have been involved in the public sector of psychiatry in North Carolina in either the state hospital system or the community mental health center system.

Conclusions

While there may be a general decrease in psychiatrists trained in the regional state institutions in North Carolina, the UNC-Dix Training Program counters this trend. In 1974 a total of thirteen residents graduated from the program while in 1983 there were 12, an insignificant change. The training program has changed over time to meet the needs of the 1980s, which are different in the public sector from what they were in the 1970s. In the 1970s, there was a need for psychiatrists trained to work in community mental health centers. In the 1980s this need appears to be more generic; that is, psychiatry is in need of training individuals competent to assume leadership roles in a variety of settings. The description of the UNC-Dix program demonstrates how state training programs may change to meet the dynamic needs of psychiatry in the public sectors. Finally, the success of the program is clear evidence that there need not be a decline in the training of individuals in psychiatry in the public, or state hospital, sector.

Reference

1 Thompson JW et al. The decline of state mental hospitals as training sites for psychiatric residents. Am J Psychiatry 1983; 140:704-707.

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And what is more reassuring to an excessively anxious patient than medication that promptly starts to relieve his discomforting symptoms? Valium® (diazepam/Roche) begins working within 30 to 90 minutes. Patients continue to improve in just a few days, and relief continues throughout the course of treatment.

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Before prescribing, please consult complete product information, a summary of which follows

Indications: Management of anxiety disorders, or short-term relief of symptoms of anxiety. Anxiety or tension associated with the stress of everyday life usually does not require treatment with an anxiolytic. Symptomatic relief of acute agitation, tremor, impending or acute delirium tremens and hallucinosis due to acute alcohol withdrawal; adjunctively in: relief of skeletal muscle spasm due to reflex spasm to local pathology; spasticity caused by upper motor neuron disorders, athetosis, stiff-man syndrome *Oral forms* may be used adjunctively in convulsive disorders, but not as sole therapy. *Injectable form* may also be used adjunctively in: status epilepticus, severe recurrent seizures, tetanus; anxiety, tension or acute stress reactions prior to endoscopic/surgical procedures; cardioversion.

The effectiveness of diazepam in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies. The physician should periodically reassess the usefulness of the drug for the individual patient.

Contraindications: Tablets or capsules in children under 6 months of age, known hypersensitivity; acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy

Warnings: As with most CNS-acting drugs, caution against hazardous occupations requiring complete mental alertness (*e g* , operating machinery, driving). Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation, usually limited to extended use and excessive doses Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months. After extended therapy, gradually taper dosage Keep addiction-prone individuals (drug addicts or alcoholics) under careful surveillance because of predisposition to habituation/dependence.

> ***Usage in Pregnancy:*** **Use of minor tranquilizers during first trimester should almost always be avoided because their use is rarely a matter of urgency and because of increased risk of congenital malformations, as suggested in several studies Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

ORAL Advise patients against simultaneous ingestion of alcohol and other CNS depressants

Not of value in treatment of psychotic patients, should not be employed in lieu of appropriate treatment. When using oral forms adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increase in dosage of standard anticonvulsant medication; abrupt withdrawal in such cases may be associated with temporary increase in frequency and/or severity of seizures.

INJECTABLE *To reduce the possibility of venous thrombosis, phlebitis, local irritation, swelling and, rarely, vascular impairment when used IV: inject slowly, taking at least one minute for each 5 mg (1 ml) given, do not use small veins,* i e., *dorsum of hand or wrist, use extreme care to avoid intra-arterial administration or extravasation Do not mix or dilute with other solutions or drugs in syringe or infusion flask If it is not feasible to administer Injectable Valium directly IV, it may be injected slowly through the infusion tubing as close as possible to the vein insertion*

Administer with extreme care to elderly, very ill, those with limited pulmonary reserve because of possibility of apnea and/or cardiac arrest, concomitant use of barbiturates, alcohol or other CNS depressants increases depression with increased risk of apnea; have resuscitative facilities available. When used with narcotic analgesic eliminate or reduce narcotic dosage at least 1/3, administer in small increments Should not be administered to patients in shock, coma, acute alcoholic intoxication with depression of vital signs

Has precipitated tonic status epilepticus in patients treated for petit mal status or petit mal variant status Not recommended for OB use

Efficacy/safety not established in neonates (age 30 days or less); prolonged CNS depression observed In children, give slowly (up to 0.25 mg/kg over 3 minutes) to avoid apnea or prolonged somnolence; can be repeated after 15 to 30 minutes. If no relief after third administration, appropriate adjunctive therapy is recommended.

Precautions. If combined with other psychotropics or anticonvulsants, carefully consider individual pharmacologic effects—particularly with known compounds which may potentiate action of diazepam, *i e* , phenothiazines, narcotics, barbiturates, MAO inhibitors and antidepressants. Protective measures indicated in highly anxious patients with accompanying depression who may have suicidal tendencies. Observe usual precautions in impaired hepatic function; avoid accumulation in patients with compromised kidney function Limit oral dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation (initially 2 to 2½ mg once or twice daily, increasing gradually as needed and tolerated)

The clearance of diazepam and certain other benzodiazepines can be delayed in association with Tagamet (cimetidine) administration The clinical significance of this is unclear

INJECTABLE Although promptly controlled, seizures may return, readminister if necessary; not recommended for long-term maintenance therapy. Laryngospasm/increased cough reflex are possible during peroral endoscopic procedures, use topical anesthetic, have necessary countermeasures available Hypotension or muscular weakness possible, particularly when used with narcotics, barbiturates or alcohol Use lower doses (2 to 5 mg) for elderly/debilitated

Adverse Reactions Side effects most commonly reported were drowsiness, fatigue, ataxia Infrequently encountered were confusion, constipation, depression, diplopia, dysarthria, headache, hypotension, incontinence, jaundice, changes in libido, nausea, changes in salivation, skin rash, slurred speech, tremor, urinary retention, vertigo, blurred vision Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances and stimulation have been reported, should these occur, discontinue drug.

Because of isolated reports of neutropenia and jaundice, periodic blood counts, liver function tests advisable during long-term therapy. Minor changes in EEG patterns, usually low-voltage fast activity, observed in patients during and after diazepam therapy are of no known significance.

INJECTABLE Venous thrombosis/phlebitis at injection site, hypoactivity, syncope, bradycardia, cardiovascular collapse, nystagmus, urticaria, hiccups, neutropenia In peroral endoscopic procedures, coughing, depressed respiration, dyspnea, hyperventilation, laryngospasm/pain in throat or chest have been reported.

Dosage: Individualize for maximum beneficial effect.

ORAL *Adults* Anxiety disorders, relief of symptoms of anxiety—Valium (diazepam/Roche) tablets, 2 to 10 mg b i.d to q.i.d.; or 1 or 2 Valrelease capsules (15 to 30 mg) daily Acute alcohol withdrawal—tablets, 10 mg t.i d. or q i d. in first 24 hours, then 5 mg t i.d or q.i.d. as needed, or 2 capsules (30 mg) the first 24 hours, then 1 capsule (15 mg) daily as needed Adjunctively in skeletal muscle spasm—tablets, 2 to 10 mg t.i.d. or q i.d.; or 1 or 2 capsules (15 to 30 mg) once daily. Adjunctively in convulsive disorders—tablets, 2 to 10 mg b.i d to q i.d.; or 1 or 2 capsules (15 to 30 mg) once daily.

Geriatric or debilitated patients Tablets—2 to 2½ mg 1 or 2 times daily initially, increasing as needed and tolerated (see Precautions). Capsules—1 capsule (15 mg) daily when 5 mg oral Valium has been determined as the optimal daily dose.

Children Tablets—1 to 2½ mg t.i.d. or q i d. initially, increasing as needed and tolerated (not for use in children under 6 months). Capsules—1 capsule (15 mg) daily when 5 mg oral Valium has been determined as the optimal daily dose (not for use in children under 6 months)

INJECTABLE Usual initial dose in older children and adults is 2 to 20 mg I.M or IV, depending on indication and severity Larger doses may be required in some conditions (tetanus). In acute conditions injection may be repeated within 1 hour, although interval of 3 to 4 hours is usually satisfactory Lower doses (usually 2 to 5 mg) with slow dosage increase for elderly or debilitated patients and when sedative drugs are added. (See Warnings and Adverse Reactions)

For dosages in infants and children see below, have resuscitative facilities available

I M use: by deep injection into the muscle.

IV use: inject slowly, take at least one minute for each 5 mg (1 ml) given Do not use small veins, i.e., *dorsum of hand or wrist Use extreme care to avoid intra-arterial administration or extravasation Do not mix or dilute Valium with other solutions or drugs in syringe or infusion flask If it is not feasible to administer Valium directly IV., it may be injected slowly through the infusion tubing as close as possible to the vein insertion*

Moderate anxiety disorders and symptoms of anxiety, 2 to 5 mg I M or IV., and severe anxiety disorders and symptoms of anxiety, 5 to 10 mg I M or IV, repeat in 3 to 4 hours if necessary; acute alcohol withdrawal, 10 mg I.M or IV initially, then 5 to 10 mg in 3 to 4 hours if necessary Muscle spasm, in adults, 5 to 10 mg I M or IV. initially, then 5 to 10 mg in 3 to 4 hours if necessary (tetanus may require larger doses), in children *administer IV slowly*; for tetanus in infants over 30 days of age, 1 to 2 mg I.M or IV, repeat every 3 to 4 hours if necessary; in children 5 years or older, 5 to 10 mg repeated every 3 to 4 hours as needed Respiratory assistance should be available

Status epilepticus, severe recurrent convulsive seizures (I.V route preferred), 5 to 10 mg adult dose administered slowly, repeat at 10- to 15-minute intervals up to 30 mg maximum Repeat in 2 to 4 hours if necessary, keeping in mind possibility of residual active metabolites. Use caution in presence of chronic lung disease or unstable cardiovascular status. Infants (over 30 days) and children (under 5 years), 0.2 to 0.5 mg slowly every 2 to 5 min., up to 5 mg (IV preferred). Children 5 years plus, 1 mg every 2 to 5 min., up to 10 mg (slow IV preferred); repeat in 2 to 4 hours if needed EEG monitoring may be helpful.

In endoscopic procedures, titrate IV dosage to desired sedative response, generally 10 mg or less but up to 20 mg (if narcotics are omitted) immediately prior to procedure; if IV cannot be used, 5 to 10 mg I M approximately 30 minutes prior to procedure. As preoperative medication, 10 mg I M.; in cardioversion, 5 to 15 mg IV within 5 to 10 minutes prior to procedure. Once acute symptomatology has been properly controlled with injectable form, patient may be placed on oral form if further treatment is required

Management of Overdosage: Manifestations include somnolence, confusion, coma, diminished reflexes. Monitor respiration, pulse, blood pressure; employ general supportive measures, IV fluids, adequate airway. Use levarterenol or metaraminol for hypotension. Dialysis is of limited value.

How Supplied:

ORAL Valium scored tablets—2 mg, white; 5 mg, yellow; 10 mg, blue—bottles of 100 and 500; Prescription Paks of 50, available in trays of 10; Tel-E-Dose® packages of 100, available in trays of 4 reverse-numbered boxes of 25 and in boxes containing 10 strips of 10.

Valrelease (diazepam/Roche) slow-release capsules—15 mg (yellow and blue), bottles of 100; Prescription Paks of 30

INJECTABLE Ampuls, 2 ml, boxes of 10, Vials, 10 ml, boxes of 1, Tel-E-Ject® (disposable syringes), 2 ml, boxes of 10 Each ml contains 5 mg diazepam, compounded with 40% propylene glycol, 10% ethyl alcohol, 5% sodium benzoate and benzoic acid as buffers, and 1 5% benzyl alcohol as preservative.

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MEDICAL EDUCATION

Don't Miss "Superdoc!"

Thomas V. Bennett

"SUPERDOC!" is the North Carolina Medical Society's 1984 Midwinter Conference, which will be held on Friday, January 27, 1984, at the Holiday Inn Four Seasons Convention Center in Greensboro.

"Superdoc!" will teach physicians and their staffs practical solutions for the management problems that waste so much of a physician's time and energy. Carefully selected experts will teach the most important elements of finding and using computer systems, managing money and personnel, and marketing medical services.

"Superdoc!" faculty will include:

— Robert Runde, President of RCR Associates, Inc., a Charlotte-based firm that specializes in computerizing medical offices. Mr. Runde has worked in the computer field for more than 23 years and has installed computers for more than 175 physicians. He has spoken to numerous medical groups and was recently interviewed by *AM News*, the AMA's weekly newspaper. Mr. Runde will give a three-part presentation entitled "Considerations for Computerizing a Physician's Office." He'll speak about when to computerize, alternatives to computerization, and steps in selecting a computer system.

— Joseph Price, M.D., a Family Practice Physician from Philadelphia, who developed a medical office management system in 1978. Dr. Price holds an M.D. degree from Temple University and studied biomedical engineering at Drexel University. He will explain how computers can be used to enhance patient management and to make continuing medical education more effective.

— Leif C. Beck, Chairman of Health Care Consulting, Inc., a national medical consulting firm. Mr. Beck holds accounting and law degrees from Duke University. He's the author of a book entitled *The Physician's Office* and of numerous articles on marketing, tax issues and office management. Mr. Beck will give a three-part presentation on personnel management, financial practice management, and medical practice marketing.

Each speaker will respond to questions and comments from the audience after each presentation. And everyone who pre-registers will receive a packet containing helpful information provided by the speakers.

Please note: The N.C. Medical Society has applied for CME credit.

The conference will last from 9:30 a.m. to 4:30 p.m. A free wine and cheese reception, co-sponsored by the NCMS and the Guilford County Medical Society, will begin at 4:30. All registrants, guests and spouses are invited.

Location

"Superdoc!" will be held at the Holiday Inn Four Seasons Convention Center in Greensboro, North Carolina. The convention center is located at the intersection of I-40 and High Point Road. Room rates are $49 single, $57 double. Conference registrants will receive pre-registration forms by return mail.

Registration

The registration fee is $25 per person. Please complete the registration form and mail it to the North Carolina Medical Society, P.O. Box 27167, Raleigh, NC 27611. Make your check payable to the North Carolina Medical Society.

"Superdoc!" — 1984 Midwinter Conference
North Carolina Medical Society
Jan. 27, 1984 — Four Seasons Convention Center
Greensboro, North Carolina

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Please list the total number of persons attending and multiply that number times the registration fee.

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Check for $______ enclosed

Refunds cannot be made after January 1, 1984, because of hotel arrangements. If you have questions, please call the North Carolina Medical Society at (919) 833-3836.

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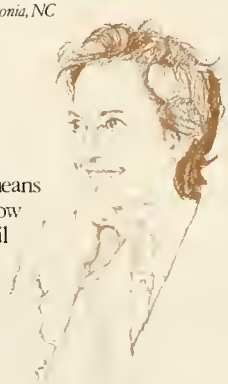

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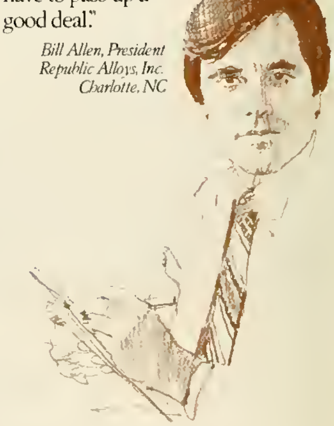
Bill Allen, President
Republic Alloys, Inc.
Charlotte, NC



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TOXIC ENCOUNTERS

Gee, Honey, Why Does the Iced Tea Have a Garlic Taste? Arsenic Intoxication

Ronald B. Mack

ARSENIC has always been one of my favorite poisons — not to use, mind — but to read about. This substance has stood the test of time and has played a prominent role in the history of medicine as well as the history of the world. Hippocrates allegedly first recorded its use as a medicinal agent and Galen advised arsenic in the form of a yellow ointment containing arsenous sulfide. During the Middle Ages and Renaissance, arsenic was a favorite poison of the power elite and was quite efficient in causing changes in leadership and/or insurance rates. It has remained an efficient method for suicide and homicide throughout much of the world's history. In a fascinating new book, *The Murder of Napoleon,*[1] the authors describe the method of proving that Napoleon was poisoned and subsequently died from chronic arsenic ingestion surreptitiously administered by one of his most trusted aides while the "Little Corporal" (et al) was exiled at St. Helena. The technique involved examining locks of Napoleon's hair (given as gifts to admirers) about 150 years after the Emperor's death and determining the arsenic content.

Arsenicals have been used fairly extensively in medicine — well into the 20th Century. Fowler's solution, potassium arsenite, was quite popular and is still available; many arsenical compounds were used as trypanocidal and spirochetical agents. One of the most famous organic arsenical medications used in the early part of this century was arsphenamine, also known as Dr. Paul Erlich's famous compound 606 — the so called "magic bullet" used against syphilis. In the first half of this century, arsenical compounds were used extensively as pesticides and whereas their usage has decreased these days they still are quite popular ant and rat killers.

We have by no means seen the end of arsenic as a problem in toxicology. It is still the most common source of acute heavy metal poisoning and is second only to lead in incidence of chronic heavy metal poisonings. There are 102 elements on the current periodic table and 72 are listed as "metals." Lead, mercury, and arsenic are referred to as the "heavy metals"; they have no known normal metabolic functions. It is probably easier to divide arsenic into its organic and inorganic forms for our purposes. The *organic arsenicals* such as tryparsamide, glycobiarsol and Carbarsone are antiprotozoan and do not really concern us in this paper. The *inorganic arsenicals* are the form of this substance used for the purpose of suicide or homicide or swallowed accidentally. The inorganic form is found in fungicides, rodenticides, insecticides, tanning agents and as a component of some paints. Employees in the smelting refining and milling industries are at particular risk. Major industrial sources of arsenic poisoning are in the hardening of copper, lead and alloys, in the production of pigments such as tempera, watercolor and oil paints, in the manufacture of some glass, and as a by-product of smelting copper ores.

Arsenic poisoning in children is usually associated with the ingestion of arsenical pesticides. The more common varieties of these pesticides occur in the *pentavalent* and *trivalent* forms. The trivalent form is more toxic but there is enough reduction of the pentavalent form to the more toxic trivalent form occurring in the intestine and other tissues to make the health care practitioner view all poisonings by arsenic-containing substances as a serious threat to the life of the patient. Although some absorption of arsenical compounds occurs via the skin and pulmonary routes, the greatest majority of poisonings occur as a result of ingestion. The fatal dose of arsenic trioxide is about 200 mg for an adult. I don't mean to scare you but there are pentavalent arsenicals in almost everything we eat, especially seafood. The allowable food residue of arsenicals is limited to 0.65 mg/lb.

The intestinal absorption of arsenic is quite efficient and it is estimated that under ordinary circumstances each of us absorbs approximately 1 mg of arsenic daily. Once absorbed the arsenic is rapidly localized in the erythrocyte, combining with the globin fraction of hemoglobin. The metal leaves the intravascular space rather quickly (within 24 hours) and is then distributed to the liver, spleen, lung and GI tract; lesser accumulation is manifested in muscle and nervous tissue. In fact, penetration of the blood-brain barrier is thought to be minimal. The arsenic that remains in the intravascular space is bound to protein. About two to four weeks after ingestion the arsenic incorporates into hair, nails and skin. Four weeks after ingestion the metal begins to localize in bone where it substitutes for phosphate; this phase coincides with the decrease in arsenic levels detectable in the liver and kidney. Most of the absorbed arsenic is excreted by the kidney and a smaller amount is removed via the liver and the intestine. Why do I tell you all of this? Do you really care? Actually it is a lot easier to understand the signs and symptoms, diagnosis and management of arsenic poisoning if you have some feeling for the kinetics.

It is a good idea to think of inorganic arsenic poisoning as

From the Department of Pediatrics, Bowman Gray School of Medicine, Winston-Salem 27103.

existing in both *acute* and *chronic* forms. Most of us will be involved in the acute form as it presents to us in childhood as a result of an accidental ingestion. The chronic form of the disease is more difficult to diagnose because it so often involves foul play. The toxic manifestations can be so dramatic and diverse that diagnosis without an adequate history is often missed.

In an acutely poisoned patient, typically a preschool child who accidentally ingested an arsenic-containing ant or rat poison, there is severe gastrointestinal irritation with burning esophageal pain, awful abdominal pain, remarkable vomiting and diarrhea which is classically bloody, and dehydration leading to cardiovascular collapse and seizures. If death does not occur during this phase of shock and/or seizures, the patient can subsequently develop hepatic, renal or cardiac failure. The severe gastrointestinal involvement, which is the hallmark of acute arsenic poisoning, is not due to direct corrosiveness of the metal but is probably caused by a vasculitis. Some other clinical features of the acute phase of this poisoning include hyperpyrexia, coma, and the unusual complaint of *scalding tears*. Such cardiac abnormalities as prolongation of the QT interval, ST-T wave abnormalities, and ventricular fibrillation and tachycardia are very real and scary possibilities with this intoxication.

Apparently in heavy metal poisonings in general the GI tract shows involvement due to its role in absorption, the liver is affected by its role as filter and detoxifier, and the kidney because of its role in excretion. Gastrointestinal and renal manifestations tend to predominate in acute heavy metal poisoning while skin, hair and nail, and nervous system injury tends to be more obvious in chronic toxic exposure. A *garlic odor* to the breath and feces in the acute and chronic cases especially helps to arouse suspicion for this toxin.

Prolonged low level but abnormal intake of arsenic results in chronic arsenic poisoning. Here the hallmark is a *peripheral neuropathy* that results in pain, paraesthesias, "stocking-glove" sensory deficits, paresis and ataxia. A common presentation could be complaints of burning pain in the hands and feet. A toxic encephalopathy, though not as common as the polyneuropathy, can present with speech or behavioral disturbances such as apathy, neuroses, psychoses. There are many dermatologic disorders associated with chronic arsenic poisoning such as bronzing of the skin, hyperkeratosis, and typical skin lesions best described as "rain drops on a dusty road." Bone marrow depression is not uncommon, manifested by anemia, leukopenia, and thrombopenia leaving the patient to all sorts of additional problems.

There are two other very prominent clinical features of chronic heavy metal poisonings such as arsenic that must be mentioned because they can possibly turn you on to the diagnosis. One of these is *alopecia*. If hair loss is present think first of thallium poisoning and secondly of arsenic. The other outstanding clinical feature is *Mee's lines* which are horizontal white bands on the fingernails (seen also in thallium poisoning).

The diagnosis of arsenic poisoning, needless to say, requires a high index of suspicion. You must think of a chronic heavy metal poisoning whenever you have a patient with polyneuropathy preceded by an acute gastrointestinal disease. Furthermore, whenever the clinical picture indicates the involvement of several organ systems put heavy metal poisoning in your differential diagnosis.

Because of the natural presence of trace amounts of arsenic, the definitive diagnosis of this poisoning is not easy and precise quantitation of arsenic levels is essential. It is true that arsenic is radiopaque and may be seen on abdominal X-ray films but because absorption is so rapid they are of limited usefulness. If there is a good history, diagnosis in acute cases is fairly direct but this history is often lacking in pediatric patients or in unsuspecting potential homicide victims. Chronic arsenic poisoning is even more difficult to diagnose clinically. Measurement of 24 hour urinary arsenic excretion probably represents the most satisfactory method of confirming arsenic exposure. People on ordinary diets excrete <20 ug/day but people who eat a lot of seafood can excrete as much as 200 ug/day. Urine excretions of arsenic in excess of 100 ug/day should be viewed with great suspicion and repeat determinations should be done. Excretions of >200 ug/day should be regarded as indicative of potentially toxic amounts. (Levels of 1.35 mg of arsenic per liter of urine have occurred after a meal of lobster tails. I don't care — I'm going to eat them anyway!!) Although there are methods available for measuring blood arsenic levels, there is poor correlation with the degree of illness (normal is <10 ug/dl). An analysis of body tissues, hair and nails can be useful in diagnosing chronic arsenic ingestion. Two to four weeks post ingestion arsenic binds to the sulfhydryl groups of keratin in hair, nails, and skin. The analysis of these tissues currently utilizes the neutron activation technique (the method used on Napoleon's hair) which not only provides precise arsenic concentration quantitatively but allows segmental analysis to determine when the arsenic was ingested and the number of episodes. This procedure can obviously be important forensically. Pubic hair (what did you say?) is preferable for this test because it eliminates to some degree the effect of atmospheric arsenic.

The treatment of acute arsenic ingestion is fairly well set and consists of *non-specific* and *specific* measures. The non-specific means evoke the general measures used for the majority of acutely ingested toxins, i.e., gastric emptying via ipecac/lavage followed by activated charcoal and a saline cathartic (if the patient's renal function is normal). It is important to provide intravenous fluids to maintain the intravascular fluid volume but to also guard against fluid overload resulting from acute tubular necrosis. The specific measures in treating acute arsenic poisoning consist primarily of administering a chelating agent (chelate — Greek — lobster claw) which incorporates the arsenic into a heterocyclic ring structure. The resultant complex is relatively stable, is soluble in water and can be readily excreted by the kidney. The time-honored chelating agent for arsenic poisoning has been BAL (British Anti-Lewisite), AKA dimercaprol. This drug must be given IM at 4 hour intervals for 5-10 days and, although efficient, is painful and causes a fair number of side effects. Another option is to use the chelating agent *D-penicillamine* which can be given orally and has less side effects. D-penicillamine, according to some recent studies, is as effective as BAL in promoting the urinary excretion of arsenic. The BAL probably should be used initially in those patients who are unable to tolerate oral medication (e.g., coma, shock, emesis, etc.) and then oral D-penicillamine can be used to complete the therapy when the patient's condition permits. During chelation therapy the urine arsenic levels should be monitored and when the level falls below 50 mg/24 hours the chelation should be stopped. After 5 days off therapy some authors suggest reinstituting treatment for further mobilization of arsenic.

In North Carolina arsenic poisoning as a form of homicide is not unknown. In fact, one of our most famous arsenic poisoners is on Death Row. She poisoned her mother, a fiance, and a couple of others. Typically, at least in the last few years, in North Carolina the poisoner is a disgruntled middle aged woman who provides the arsenic in her mate's food and/or drink (often tea). And when questioned on the witness stand regarding motive the "arsenic-giver" typically says "I only wanted to keep him home at night." Many of these unsuspecting men now definitely are home nights, in a little jar on the mantlepiece. For all of you "strayers" — BE CAREFUL OUT THERE!!

Reference

1. Weider B, Hapgood D: The Murder of Napoleon. Berkeley Books, New York, 1983.

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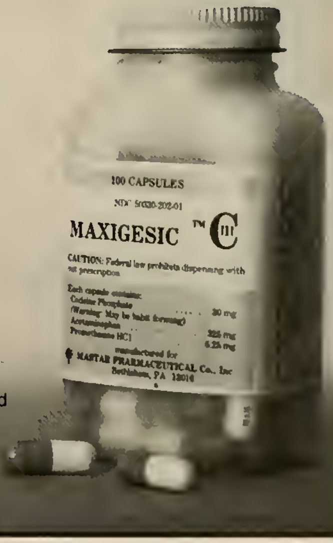
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IN STATE

December 8-10
"Microcomputers in Medical Education"
Place: Chapel Hill
Credit: 18 hours, Category 1 AMA
Fee: $325
Info: Ruth De Bliek, 322 MacNider Building 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/966-3641

December 8-10
"Pediatric Imaging Seminar"
Place: Winston-Salem
Credit: 20 hours, Category I AMA
Info: Postgraduate Course in Medical Sonics, 300 S. Hawthorne Road, Winston-Salem, NC 27103. 919/748-4505

December 10, 17
"ECG Interpretations"
Place: Chapel Hill
Info: Leonard S. Gettes, M.D., 353 Burnett-Womack Building 229H, UNC School of Medicine, Chapel Hill, NC 27514 919/966-5203

December 21
"Obstetrical Analgesia"
Place: Sanford
Credit: 2 hours, Category I
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

January 1984
"Advanced Seminar for Certification in Administrative Psychiatry"
Place: Chapel Hill
Credit: 32 hours
Info: Malinda Marsh, Department of Community Psychiatry, UNC School of Medicine, Wing D, 208H, Chapel Hill 27514. 919/966-5277

January 8-11
"Advanced Clinical Teaching Skills"
Place: Rougemont
Credit: 20 hours, Category 1 AMA
Info: Dr. Katharine Munning, 407 Crutchfield Street, Durham 27705. 919/471-2571

January 14, 21, 28
"Cardiac Arrhythmias: Mechanisms, Diagnosis & Management"
Place: Chapel Hill
Info: Leonard S. Gettes, M.D., 353 Burnett-Womack Bldg. 229H, UNC School of Medicine, Chapel Hill 27514. 919/966-5203

January 18-20
"Alcoholism: The Search for the Sources"
Place: Charlotte
Fee: $100
Info: John A. Ewing, M.D., Medical School Wing B, 207H, Chapel Hill 27514. 919/966-4551

January 26
"Records and Other Necessities"
Place: Wilmington
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh 27611. 919/828-9334

February 3-4
"Live from Duke — Pediatrics 1984"
Place: Durham
Credit: 11.5 hours, Category I AMA; PREP
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham 27710. 919/684-6485

OUT OF STATE

February 5-11
"Winter Conference in Internal Medicine"
Place: Snowshoe, VA
Credit: 20 hours Category 1 AMA
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham 27710. 919/684-6485

February 12-17
"Postgraduate Course in Diagnostic Imaging"
Place: Cancun, Mexico
Credit: 25 hours Category 1 AMA
Info: Donald R. Kirks, M.D., Box 3808, Duke University Medical Center, Durham 27710. 919/681-2711, ext. 286

Announcement of a Trial in Process

Family Health International, America's largest nonprofit center for international contraceptive evaluation, is seeking physicians interested in conducting a clinical trial to determine acceptability, safety, and effectiveness of two vaginal contraceptive tablets. Each trial will include a minimum of 50 volunteers, ages 18-40, in good health, and at risk of pregnancy. Foaming tablets containing either nonoxynol-9 or the spermicide menfegol (IND filed), will be randomly assigned to women who will be followed-up at 1, 3, 6 and 12 months after admission. Physicians with potential of recruiting 50 volunteers in 12 months time should contact: Albert Siemens, Ph.D., Special Assistant to the President, Family Health International, Research Triangle Park, NC 27709, Telephone: 919/549-0517.

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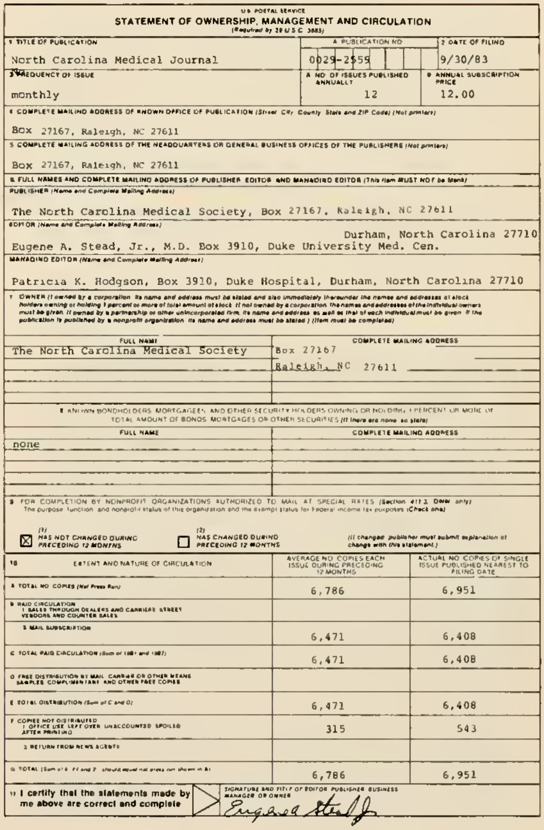

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In Memoriam

James Block Wheless

Dr. James Block Wheless, a member of the Franklin County Medical Society, died on July 18, 1983 at the age of seventy-two. He was born in Louisburg, North Carolina on October 11, 1910. He was educated at Wake Forest College and Wake Forest Medical College for two years and received his M.D. degree from the University of Maryland. His internship was served at City Memorial Hospital in Winston-Salem, North Carolina. He opened a General Practice in Louisburg, North Carolina in 1937 and continued in active practice until March of 1983.

In addition to his busy medical practice, he served as a Medical Director of the Franklin County Health Department for many years. He was Chairman of the first Board of Trustees of Franklin Memorial Hospital and was on the Board of Trustees of Wake Forest College at the time of its move to Winston-Salem in 1954. He is survived by his wife, Ann B. Wheless, a son, J. B. "Buddy" Wheless, Jr., a lawyer in Fayetteville, a daughter, Dona Wheless Stanton and a grandson, J. C. Stanton, IV, of Atlanta, Georgia and a brother, Dr. Thomas O. Wheless, a physician in Louisburg.

James Madison Covington, Jr., M.D.

James M. Covington, Jr., deeply respected and greatly loved senior physician in Anson County, died June 24, 1983.

He was a native of Anson County, born in Wadesboro, and he received a B.S. degree from Davidson College in 1934, and an M.D. degree from Duke University Medical School in 1938. After an internship at Grady Hospital, Atlanta, and residencies at Emergency Hospital, Washington, D.C., and Duke Hospital, he went into general practice with his father, Dr. J. M. Covington, Sr. in Wadesboro, North Carolina. After his father's death, he continued many years of active general practice with his own Clinic building and on the Staff of the Anson Sanitorium and its replacement, the Anson County Hospital. In the past few years he practiced as an internist and was semi-retired since 1982.

During World War II he served three years as Medical Officer in the United States Navy.

Dr. Covington is remembered by his patients, medical personnel and colleagues for his meticulous and devoted care of his patients, and for his patient and loyal performance of staff obligations and willing help in the implementation of increasingly complex administrative functions. He is also remembered for his untiring help in providing care for the elderly patients in hospital, skilled nursing facilitĭes, nursing home and home.

Dr. Covington was a member of the Anson County Hospital Staff, American Medical Association, and North Carolina Medical Society. He also was a Medical Surgeon for Seaboard Airline and Atlantic Coastline Railroads.

He is survived by his widow, Imogene, two daughters, Mrs. Steve Bost and Mrs. Joseph Estwanik, and five grandchildren.

Edwin Burtis Aycock, M.D.

Dr. E. B. Aycock died August 26, 1983. Dr. Aycock was born in Fremont, North Carolina, on August 13, 1909. He graduated from UNC-Chapel Hill in 1930 with an AB degree. He attended the UNC School of Medicine and graduated from McGill University Faculty of Medicine, Montreal, P. Q., Canada, in 1936. He interned and did residency training at Vancouver General Hospital, Vancouver, British Columbia, from 1936 to 1939. He began his general practice of medicine in Greenville, N. C., in 1939.

In 1942 he joined the U. S. Army Medical Corps and served until 1946, being discharged with the rank of Captain. He then returned to Greenville and continued his general practice until he retired in 1976.

"Burt" Aycock was a charter member of the Pitt County Memorial Hospital Board of Trustees. He served as Chief of Staff in 1955 and 1956. He was a Life Member of the Pitt County Medical Society and the North Carolina Medical Society.

He served on the Greenville City School Board for fifteen years as a member and its chairman. The E. B. Aycock Junior High School was named in his honor for his contribution to education. He served as the team physician for Rose High School for 30 years. Dr. Aycock also served on the Salvation Army Board of Directors and was a past president of the Greenville Lions Club. He was recipient of numerous gifts and certificates of appreciation for civic services rendered. He was an involved member of Immanuel Baptist Church.

"Burt" Aycock enjoyed fishing and hunting. He frequently returned to Canada to fish with his Canadian physician friends. He was always ready with a good joke or story for his many friends and colleagues. He was devoted to his patients, his family and his friends. His motto was framed in his office: "I expect to pass through this life but once. If, therefore, there is any kindness I can show or any good I can do to any fellow being, let me do it now, for I shall not pass this way again."

Dr. Aycock is survived by his wife, Jean Hodges Aycock, three sons, Edwin Burtis Aycock, Jr., of Greenville, John Gordon Aycock of Winter Park, Florida, and Howard Hodges Aycock of Charlotte, his mother, Mrs. Mattie Aycock of Fremont, and four grandchildren.

Letters to the Editor

About Coalitions

To the Editor:

Congratulations on your continued accomplishments with the *North Carolina Medical Journal.* I felt that your Editorial, ''Requirements for Successful Coalitions'' (NCMJ 1983; 44:469), was particularly good.

Perhaps after the second sentence in the second paragraph the thoughts included were so complex as to distract from the first and last paragraphs. There was plenty of ''meat'' in the first paragraph, first two sentences of the second paragraph, and the third paragraph for any one editorial.

I hope the *Journal* will continue to improve and to improve the health care of us North Carolinians.

Thomas B. Dameron, Jr., M.D.
P.O. Box 10707
Raleigh 27605

Effective communication is always difficult. I believe there is some red meat in the second paragraph. Give me a break and re-read it.

Health Education for Children

To the Editor:

The purpose of this letter is to encourage other doctors to become more active in the education of children regarding their health.

I have developed a puppet show which is aired each month on WLOS-TV, ''The Mr. Bill Show.'' The scripts are approximately six minutes in length and are a very entertaining way to impart health and medical tips to children.

The characters consist of myself as ''Dr. Claude'' and two high school students who portray the puppets.

This show has been a huge success in the Asheville area for the two years it has aired. It appears to be a positive influence in teaching children the proper way to care for their bodies. Bill Norwood, the M.C., has been so pleased with the scripts and the response by his audience that he suggested I pass this idea along to other physicians so they could implement this in their area. Several of the local schools have expressed interest in these scripts for some of their assemblies. Our most recent script synopsis follows:

Fun In The Sun

Wendy: Whoo eee, it's hot!

Dwayne: Sure is. Let's go swimming at Zachary's house. His pool will sure cool us off.

Wendy: I can't till Mom gets home.

Dwayne: Where'd she go?

Wendy: Gosh, didn't you see us get Missus Jones into our car?

Dwayne: No. What happened?

Wendy: Missus Jones fainted out in her garden. She fell right down and got all white and everything. Mom and I ran over and then she kind of woke up, but she said she was awful sick, so Mom took her to the e-mer-jen-see room over at the hospital.

Dwayne: Gosh, why'd she faint?

Wendy: Mom said she thought maybe it was because it's so hot. I hadda run in the house and get some ice cubes and a towel. Mom put it on Missus Jones' forehead. She kept saying she felt like she'd pass out again.

Dwayne: You mean you can get sick when it's hot?

Wendy: I dunno, but here comes Dr. Claude. Let's ask him.

Dr. C.: Morning, kids. Hot enough for you?

Dwayne: Whoosh, you bet!

Wendy: Dr. Claude, why does getting hot make you sick?

Dr. C: Golly, are you sick, Wendy?

Wendy: No. But Missus Jones fainted working in her garden and Mom hadda take her to the emergency room at the hospital. What was the matter with her?

Dr. C.: That sounds like heat exhaustion or heat stroke.

Dwayne: What's that?

Dr. C.: Well, the heat can get you in three different ways: heat cramps, which are uncomfortable but not too serious; heat exhaustion and heat stroke, and the last can be especially dangerous.

Wendy: What's heat cramps?

Dr. C.: You get cramps in the muscles of your legs and stomach, and they can be quite painful.

Dwayne: Gosh, what should you do?

Dr. C.: Get out of the sun into a cool place, drink lots of water, and put a pinch of salt in one glass full of that water.

Wendy: Did Missus Jones have heat stroke?

Dr. C.: She could have suffered from either heat exhaustion or heat stroke.

Dwayne: Well, what's heat exhaustion?

Dr. C.: It's more uncomfortable but not as painful as heat cramps. You get dizzy and faint, have a headache, breathe quickly and sweat a lot, for your body is trying to cool itself off by perspiring.

Wendy: Can you cure it by getting out of the sun and drinking lots of water?

Dr. C.: You do that, yes, but you should lie down with your head and shoulders lower than your feet and be careful not to get chilled. It is also good to see a doctor.

Dwayne: Why is heat stroke worse? Can it kill you?

Dr. C.: Yes, it can kill you and it's worse because your body no longer can sweat to cool itself off, so your temperature gets very high and this causes damage, enough damage that you become unconscious.

Wendy: Gosh, what do you do?

Dr. C.: Well, if you see someone, like Mrs. Jones, who has fainted out in the sun, you do just what your mother did, Wendy. You get them into a cool place, put ice or cold water on their forehead and wrists and all over the body if possible, and rush them to the hospital.

Wendy: Gee, Mom did right. Maybe she even saved Missus Jones' life!

Dr. C.: It is possible.

Dwayne: Are there lots of people who get sick from the sun?

Dr. C.: Yes. Just this summer there were 124 reports of illnesses in Georgia blamed on the heat and 24 in Kansas City.

Dwayne: Gosh! I better tell Grandmother to be careful outside in her flower garden! Right, Dr. Claude?

Dr. C.: Yes. The elderly are prime victims of heat. They should stay indoors and as cool as possible.

Dwayne: Boy, I'm sure going to be careful when it's hot.

Dr. C.: Fun in the sun is fine, but too much of it can make you decline!

W & D: Awww!

Dr. C.: You don't like rhymes?

Dwayne: Not that kind, but I got a riddle for you. Where do spooks get their mail?

Dr. C.: Ummmm, I don't know. Where?

Dwayne: At the ghost office!

Dr. C.: Ha ha! One good joke deserves another. Tell me why the light turned red in the middle of the street.

Dwayne: I don't know.

Dr. C.: You would turn red too if you changed in the middle of the street!

D & W: Haha! Bye Dr. Claude.

Dr. C.: Bye kids!

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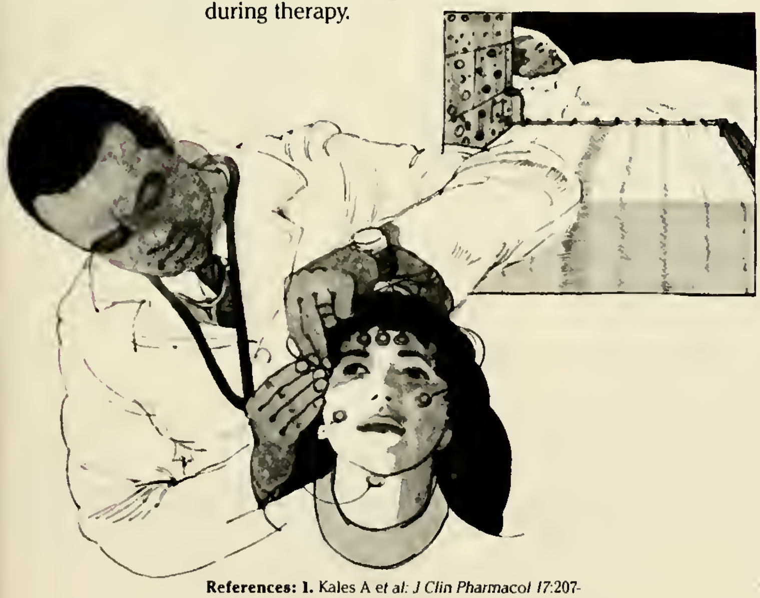

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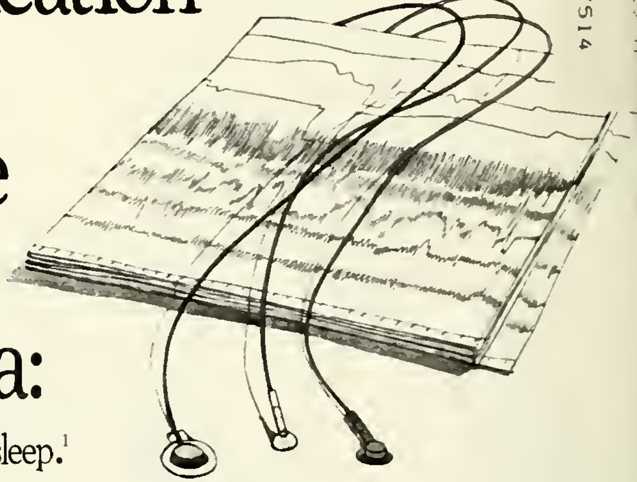

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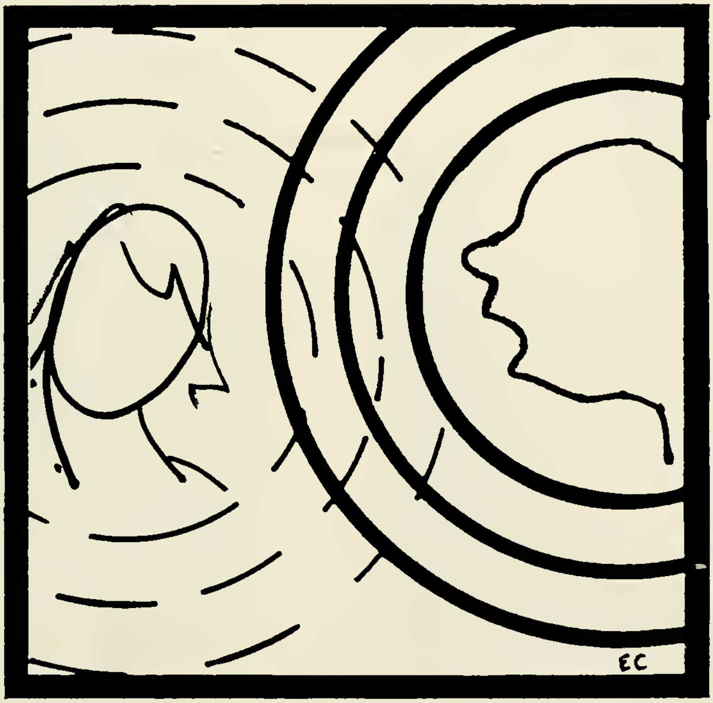

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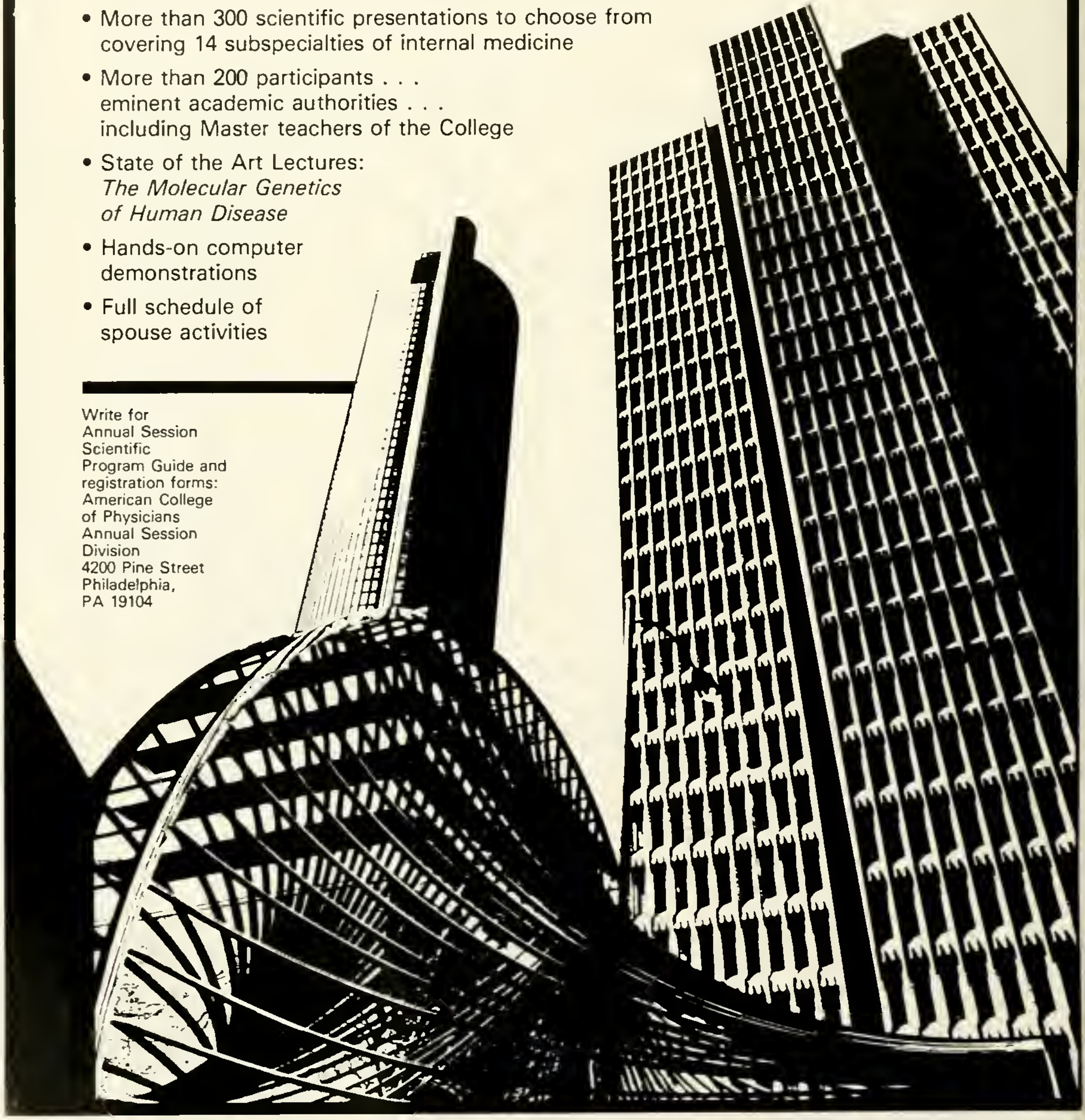

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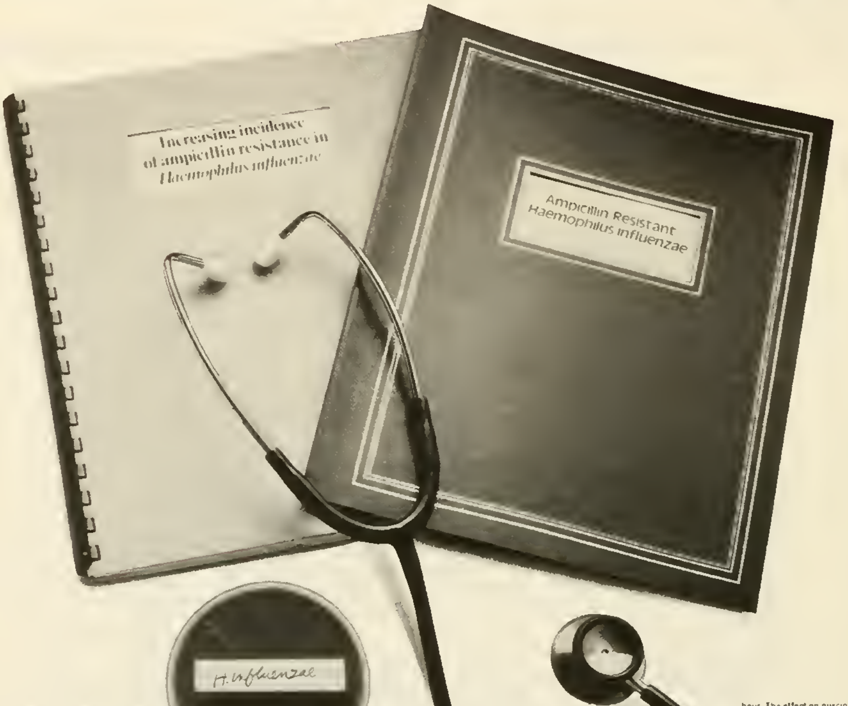
An added complication... in the treatment of bacterial bronchitis*


Increasing incidence of ampicillin resistance in Haemophilus influenzae
Ampicillin Resistant Haemophilus influenzae
H. influenzae
S. pneumoniae

Brief Summary. Consult the package literature for prescribing information

Indications and Usage Ceclor® (cefaclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms

Lower respiratory infections including pneumonia caused by *Streptococcus pneumoniae (Diplococcus pneumoniae) Haemophilus influenzae* and *S pyogenes* (group A beta-hemolytic streptococci)

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Ceclor

Contraindication. Ceclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics

Warnings: IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS, INCLUDING ANAPHYLAXIS TO BOTH DRUG CLASSES

Antibiotics including Ceclor, should be administered cautiously to any patient who has demonstrated some form of allergy particularly to drugs

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides, semisynthetic penicillins and cephalosporins), therefore it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics Such colitis may range in severity from mild to life-threatening

Treatment with broad spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone In moderate to severe cases, management should include sigmoidoscopy appropriate bacteriologic studies and fluid electrolyte and protein supplementation When the colitis does not improve after the drug has been discontinued, or when it is severe oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C difficile* Other causes of colitis should be ruled out

Precautions *General Precautions*—If an allergic reaction to Ceclor occurs the drug should be discontinued and, if necessary the patient should be treated with appropriate agents, e g pressor amines antihistamines, or corticosteroids

Prolonged use of Ceclor may result in the overgrowth of nonsusceptible organisms Careful observation of the patient is essential If superinfection occurs during therapy appropriate measures should be taken

Positive direct Coombs tests have been reported during treatment with the cephalosporin antibiotics In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs testing of newborns whose mothers have received cephalosporin antibiotics before parturition it should be recognized that a positive Coombs test may be due to the drug

Ceclor should be administered with caution in the presence of markedly impaired renal function Under such conditions careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended

As a result of administration of Ceclor a false-positive reaction for glucose in the urine may occur This has been observed with Benedict s and Fehling s solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip USP Lilly)

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease particularly colitis

Usage in Pregnancy—Pregnancy Category B—Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Ceclor There are however no adequate and well-controlled studies in pregnant women Because animal reproduction studies are not always predictive of human response this drug should be used during pregnancy only if clearly needed

Nursing Mothers—Small amounts of Ceclor have been detected in mother's milk following administration of single 500-mg doses Average levels were 0 18, 0 20, 0 21 and 0 16 mcg ml at two three four, and five hours respectively Trace amounts were detected at one hour The effect on nursing infants is not known Caution should be exercised when Ceclor® (cefaclor, Lilly) is administered to a nursing woman

Usage in Children—Safety and effectiveness of this product for use in infants less than one month of age have not been established

Adverse Reactions Adverse effects considered related to therapy with Ceclor are uncommon and are listed below

Gastrointestinal symptoms occur in about 2 5 percent of patients and include diarrhea (1 in 70)

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment Nausea and vomiting have been reported rarely

Hypersensitivity reactions have been reported in about 1 5 percent of patients and include morbilliform eruptions (1 in 100) Pruritus, urticaria and positive Coombs tests each occur in less than 1 in 200 patients Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis arthralgia and frequently, fever) have been reported These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Ceclor Such reactions have been reported more frequently in children than in adults Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy No serious sequelae have been reported Antihistamines and corticosteroids appear to enhance resolution of the syndrome

Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients)

Causal Relationship Uncertain—Transitory abnormalities in clinical laboratory test results have been reported Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician

Hepatic—Slight elevations of SGOT, SGPT or alkaline phosphatase values (1 in 40)

Hematopoietic—Transient fluctuations in leukocyte count predominantly lymphocytosis occurring in infants and young children (1 in 40)

Renal—Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200)

[061782R

Some ampicillin-resistant strains of Haemophilus influenzae—a recognized complication of bacterial bronchitis*—are sensitive to treatment with Ceclor.[1-6]

In clinical trials, patients with bacterial bronchitis due to susceptible strains of Streptococcus pneumoniae, H. influenzae, S. pyogenes (group A beta-hemolytic streptococci), or multiple organisms achieved a satisfactory clinical response with Ceclor.[7]

Ceclor®
cefaclor

Pulvules®, 250 and 500 mg

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* Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S pneumoniae* or *H influenzae* [8]

Note Ceclor is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever See prescribing information

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EDITORIAL

Macdonald Critchley, C.B.E., M.D., F.R.C.P. A Tribute

Lawrence C. McHenry, Jr., M.D.

DR. Macdonald Critchley, Consulting Physician to the National Hospital, Queen Square, London, is easily England's premier neurologist. His teachers were trained by the founders of English neurology and his own career spans a half century of advances in neurology.

Dr. Critchley was born in Bristol, England in 1900. While he was a student of the Christian Brothers College, he founded and edited the school magazine. When he was 11 years old, he won his first literary prize in the newspaper, *The Daily Mail.* With the two-guinea award, he purchased his first bookcase, which he still has in the study in his home. Although he attained a place at the University at the age of 15 years, he was found to be too young to attend, so he stayed at the school for another year and began learning Greek. After military service from 1917 to 1918, Critchley returned to Bristol University and graduated with first degree honors at the age of 21 years. He then became House Physician at the Bristol General Hospital. His next appointment was House Physician to the Hospital for Sick Children on Great Ormond Street. This took him to London where he has remained since. In 1923, he was appointed House Physician to the National Hospital, Queen Square, and in the ensuing 50 years he has maintained links with that hospital. He was appointed to the consulting staff at the age of 27 years.

Before World War II, Dr. Critchley traveled extensively in Europe, having become fluent in both French and German. It was by means of these languages that he kept abreast with the neurological literature and made many friends in Europe, particularly in Germany and France. In 1939 at the outbreak of World War II, Dr. Critchley joined the Royal Navy and became Consultant with the rank of Surgeon Captain. During his seven years of active service, he performed original research into the hardship endured by shipwreck survivors, as well as investigating conditions in adverse climactic circumstances. The latter was carried out by his extensive travels — from the winter on an Arctic convoy of British ships carrying supplies to the Russians, to the tropical summers in the Persian Gulf and Far East. Upon his discharge from the service in 1946, Dr. Critchley returned to the National Hospital where he remained until his retirement from the active staff in 1965. He continued to stay on at Queen Square, however, maintaining consulting rooms next door to the hospital, where he continues to see patients and occasionally teach.

His publications include over 15 books and more than 200 papers. Sixty of his papers are on linguistics or aphasia, 16 on neuro-ophthalmology, 15 on developmental dyslexia, 12 on migraine, 10 on geriatric neurology, 7 on epilepsy, 6 on sleep, 6 on body image, and 5 on the neurological effects of electric shock and lightning. He has also become an authority on the neurological consequences of boxing as well as a variety of other miscellaneous neurological topics. His book, *The Parietal Lobe,* has become a neurological classic. On his 80th birthday, he was honored with a *Festschrift* by 50 of his friends. This became a splendid volume on the historical aspects of the neurosciences.[1] I first met Dr. Critchley in 1963 during my early studies of Samuel Johnson and in the history of neurology. Although he was an inspiration then, the last 20 years have shown not only the depth but also the breadth of his knowledge, as well as his never-ending charm.

Dr. Critchley has been an inveterate collector since he was a young boy when he formed collections of fossils, rocks, crystals, etc. He rarely consistently stayed on one thing but was always interested in books. From his earliest days he began searching second-hand bookshops and has kept that up all of his life. When he was in the Navy he had the opportunity of traveling throughout the United Kingdom and went into a large number of second-hand bookshops. On one occasion when he was in the city of Bath, he found a box of books with a sign on it: "Help yourself, one shilling." As he picked up a book and opened it he found written on the fly leaf the signature of Oscar Wilde. From that time on, he has been an ardent collector of everything related to Oscar Wilde, and not only has become an authority on Wilde but has the largest collection on Wildeana in the United Kingdom, including the bills sent by the hotel where Wilde died and the check with which the executors paid the bill. His historical endeavors also include a study of Samuel Johnson's aphasia, the migraine headaches of Anne, Countess of Conway, and books on Sir William Gowers, the founder of British neurology, and on James Parkinson.

Dr. Macdonald Critchley was visiting professor of neurology at Bowman Gray School of Medicine in May 1983. As well as the lecture on aphasia in this issue of the *Journal,* he lectured on "Some Twentieth-Century Neurological Giants: Sir Gordon Holmes, Sir Francis Walsh, and Kinnier Wilson" and "The Rise of French Neurology, Charcot and His School." He presented a public lecture on the medical and legal aspects of Oscar Wilde. His clinical demonstrations to the medical students and house staff

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From the Department of Neurology, Bowman Gray School of Medicine, Winston-Salem 27103.

were particularly memorable. One patient he saw had had five CT scans, all of which were normal. After listening to the patient's history and performing a detailed neurological examination, Dr. Critchley arrived at the patient's diagnosis. This was an inspiration to not only the students and residents but also the attending staff, pointing out to all assembled the importance of the clinical history and the careful neurological examination. Dr. Critchley reaffirmed to us that our modern technology will never replace bedside teaching and clinical observation. This is further shown in his lecture on aphasia.

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EDITORIAL

The Other Side

Robert L. Phillips, M.D.

I question how many people are really serious about reducing the cost of medical care. It seems it depends upon what one's particular interests and concerns are. In the August 1983 *North Carolina Medical Journal*, we read a pleasing ABC cookbook recipe-style article on the proper method of creating a medical/business coalition in each community. This is a positive step in cost containment and needs the support of all. The article states, and this message has been stated for years, "that the private sector has to get this job done or the government will again attempt to do it for us." We in Guilford County have had for some time a busy medicine/business health coalition and the cost of care has done nothing but escalate. The article lists under possible caveats, "you should anticipate some adversarial bias," . . . and that you should. However, if we are serious about containing the cost of health care, then some key questions must be asked and eventually answered. I don't know any of the answers to the questions below but I hope somebody does.

1. How do we stop practicing defensive medicine to partially lessen the possibility of going to court? For instance, we all know that the majority of x-rays taken in and out of the emergency rooms are taken for defensive reasons. How many defensive tests in and out of the hospital are done? Some hospitalizations are prolonged for the same reason. Fully realizing that accountability to the patient is necessary, when will we ever be able to take on the legal profession which probably is responsible for one of the greatest increases in the cost of medical care in this country?

2. How does one stop business from offering great packages to prospective employees, which often includes a family health umbrella? Business, small and large, should be concerned about the cost of medical care because it takes so much of their dollar. No small wonder they are aggressively coming up with every conceivable idea to reduce their costs. This is compounded when some of their business decisions are real blunders and the whipping boy is the health care they promised in their employment package. Since some business practices are part of the problem, they must surely provide some of the answers.

3. How does one stop some doctors and hospital administrators from excessively using beds . . . especially when there is a strong financial incentive involved? The Diagnostic Related Groups (DGRs) may help, but they are not going to put a dent into those who wish to abuse the use of the hospitalization. Those people are already thinking overtime!

4. Can we really reduce the occasional fee abuse that we hear about? I personally think this is a very small part of the package, but still not to be condoned. Although the Federal Trade Commission ruled in 1980 that the AMA couldn't tell its members not to advertise, fortunately only a few do. It may be legal, "but it ain't right." Do good work, be available, be honest and the rest will come. Advertising and demanding a fee prior to surgery are gaining more acceptance by the consumer, but I cringe when I hear about it. These practices carry with them a certain amount of arrogance and arrogance in medicine is pretty ridiculous.

5. How does one keep politics out of our great financial watch-dog — the Department of Human Resources — especially the State Certificate of Need Section? This program has often been discredited as a way of guiding the growth of an efficient health care system and simultaneously keeping cost increases under control. Explain to me how when a particular request is neither approved nor recommended by the local HSA staff, is turned down by the local project committee, is turned down by the regional HSA board, it is suddenly approved by the State in its infinite wisdom? Politics has no place in such a serious arena but yet one has to believe, in the above areas, it has most everything to do with it.

6. How does one stop the Board of Trustees and hospital administrators from enhancing their own institution, espe-

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From 200 East Northwood, Suite 206, Greensboro 27401.

cially in face of strong competition? These people approve contracts to doctors that are often unrealistic and apply for expansions to stay competitive. When they obtain the expansion, monies have to be generated from patients to cover the debt incurred. In the meantime all hospitals have their cost containment program — cost containment being a modern expression to replace the old-fashioned notion of saving money one place so it can be spent in another. These programs, however, put emphasis on minor items such as paper clips, paper, sponges, etc.

7. How does one reduce the growth in this free enterprise system of the "For-Profit Hospitals and Free Standing Ambulatory Surgical Facilities," when it is clear that profit is a very strong and prevalent motive? "We have this profit because of increased efficiency and better purchasing power" just doesn't wash anymore. We are developing a lot of "St. Elsewheres" because the non-profit hospitals are offering the necessary money-losing services for good quality care. They will not refuse to treat and admit those who need it, regardless of income, and can't stay competitive in offering groups or physicians enticements for using their hospitals. Extravagant hotel-like amenities to the patients, their families and their visitors are indeed costly. The philosophy that some hospitals have: "A happy and contented visitor is a prospective patient" carries with it a high price tag.

When physicians own all or part of the for-profit facilities, the tendency for self-serving practice is enhanced. Wouldn't it be great for this same group to put all their effort and money into improving the existing services in the non-profit institutions? These are the institutions that have been loyal to the physicians, the practice of medicine, and the community for a number of years.

Time (and this is getting short) will tell us if this committee or a similar committee is ready to face up to these hard questions. The issues can be identified but doing anything about them is something else. They or someone has to be willing to call a spade a spade or surely the handwriting is on the bureaucratic wall. The fate of the consumer is at stake, the consumer being those patients we all swore to help no matter what the circumstances were. Generally they have taken a financial beating for some pretty odd and interesting reasons. Also, they have received the highest quality of medical care at a cost that has been phenomenal.

I do know there are *some* who are truly interested in keeping down the cost of medical care, but I have also seen all of the above occur. I question again, How many people are really serious about reducing the cost of medical care?

EDITOR'S NOTE: The author has suggested a regular column to give readers an opportunity to give their side of a particular issue. Are you interested?

EDITORIAL

NCMJ Advertising Revenue

Eugene A. Stead, Jr., M.D.

THE *North Carolina Medical Journal* became a stockholder in a non-profit corporation established by several states when the AMA stopped soliciting advertisements for state journals. This organization, called State Medical Journal Advertising Bureau (SMJAB) was incorporated to solicit advertising from large pharmaceutical companies. SMJAB selected Williams & Wilkins as its sales representative; they solicit ads from major pharmaceutical firms whose advertising arms are usually located in New York, Philadelphia, or other large cities. We pay SMJAB $34 of every $100 of national ad revenue; they pay Williams & Wilkins out of their share.

The *Journal* also receives revenue from local ads. We pay no commission on local ads but the revenue has always been relatively small because little effort has been expended on soliciting local ads.

In the last few years our revenue from SMJAB has decreased. We have discussed changing agents but I believe that our troubles run deeper than the agent. More and more nationally distributed periodicals are vying for the pharmaceutical dollar. Nationally distributed journals can reach many thousands of readers while state journals serve a much smaller constituency.

My inclination is to place more emphasis on obtaining local advertising. If we can persuade our doctors to leave the *North Carolina Medical Journal* in their waiting rooms, we will reach a much larger constituency. We also should consider paying a commission to any member of the staff of the North Carolina Medical Society who obtains ads from organizations that did not advertise in our *Journal* for the previous year. I prefer this incentive approach. The alternative would be to add a staff person whose specific responsibility would be to solicit local advertising.

We discussed this problem at the meeting of the Editorial Board held in Southern Pines on October 1, 1983. Dr. Styron, the chairman, and other members of the committee suggested that I write an editorial on advertising income and find out if a majority of our members are favorable to my incentive approach.

Let's hear from you.

SCIENTIFIC ARTICLE

Giardiasis at North Carolina Memorial Hospital

Richard A. Davidson, M.D., M.P.H.

THIS is the second in a group of articles dealing with parasitic infections in the state of North Carolina. Perhaps these discussions will raise the consciousness of clinicians regarding the prevalence, symptomatology, diagnosis, and treatment of common intestinal parasites.

Giardiasis is now the commonest parasitic infection in the United States[1] and the state of North Carolina; of 5,927 stool specimens received by the North Carolina State Health Department in 1982, 396 or 6.7% were positive for *Giardia lamblia* (personal communication, George Robertson). For many years the protozoan was felt to be a harmless commensal organism, but in the last 10 years it has become clear that *Giardia lamblia* frequently causes an acute diarrheal illness, with malabsorption and dehydration. The infection may be spread by infected water supplies or food. Additionally, person-to-person transmission has been documented in day care centers and among homosexuals.

Diagnosis and Treatment

The motile trophozoite stage lives in the upper small intestine, where it attaches to the mucosa via a ventral sucking disk. As trophozoites traverse the bowel, they become encysted. These cysts are most frequently found in the stool. Only in severe diarrhea are trophozoites readily found in the stool. Some authorities feel that only 30 to 50% of patients with giardiasis will have positive stool specimens. Many of the remaining patients will have trophozoites demonstrable in the duodenum, via biopsy, intubation and duodenal sampling, or the use of the "string test" (Enterotest).[2] In situations where the diagnosis is strongly clinically suspected, and stool exams have been negative, duodenal sampling by one of these three methods is essential to prevent disastrous consequences. Like most intraluminal parasites without a tissue stage in its life cycle, *Giardia lamblia* does not routinely cause eosinophilia.

The choice of treatment of giardiasis is controversial at best. There are three drugs which are generally used in the U.S. These include metronidazole and furazolidone, which have both been found to be carcinogenic in animals,[3, 4] and quinacrine, an antimalarial which may cause severe side effects, especially in children.[5] While two small retrospective studies have suggested no large excess cancer risk in women who have taken metronidazole,[6, 7] many physicians avoid using the drug, especially in children. While both metronidazole and quinacrine have cure rates of over 90% (furazolidone is closer to 80%), I feel that the side effects of metronidazole are considerably less than those of the other drugs, and that the risk of using a course of metronidazole is acceptable in most situations; note that the public accepts a similar risk on a much larger scale with regard to the use of saccharine, which was also found to cause cancer in animals.

It is essential to examine the stools to be certain that the treatment has been successful. Remember that patients may continue to pass non-viable cysts in their stools up to a week after successful therapy. When repeat stools are positive, reinfection should be considered and other family members and water supplies should be investigated.

Most series describing either the presentation of giardiasis or its treatment have been done in overseas areas where the infection is largely endemic. For this reason, descriptions of American populations and their symptomatology are infrequently seen in the literature. This may be important, as it has been suggested that populations with high endemnicity may have fewer symptoms, either because of a cultural immunity or a lack of pathogenicity of strains of *Giardia lamblia*.[1] In order to characterize the infected population at North Carolina Memorial Hospital, all patients with laboratory-documented infection with *Giardia lamblia* between 1978 and mid-1983 were analyzed.

Demography: There were 71 patients diagnosed by stool exam as having infection with *Giardia lamblia;* 75% of these patients were white, 13% were black, and 10% were oriental. Thirty-five, or 49%, were 15 years of age or younger, and 36 were older than 15. One-fourth were diagnosed as inpatients, and three-fourths in the clinics.

Exposure history: Eleven (15%) were recent immigrants to the United States from overseas. These patients were from Africa (5), mideast Asia (3), India, Mexico, and Turkey. Only 56 of the 71 patients (79%) had adequate clinical and historical information in the chart for further analysis. Four patients (7%) had just returned from trips when they became ill; their trips were to Canada, Denver, Ireland, and the coast of North Carolina. At least five of the 27 children with complete records (18%) were enrolled in day-care centers, and in two cases there were known infections in their day-care centers which raised parental suspicion. At least two of the adults were homosexuals. There were two instances in which two members of the same family were infected, and in both instances there were one parent and one child infected.

Symptoms: Almost all adults who had symptoms had diarrhea, frequently associated with crampy abdominal pain. One-third of the children carried the diagnosis of failure to thrive, and one-third of the adults gave a history of acute weight loss varying from one to 10 kilograms.

From the Department of Medicine, University of North Carolina, Chapel Hill 27514.

Because of inadequate charting, these figures probably underestimate the true occurrence of symptoms.

Treatment: Information about treatment was present in 59 (84%) of the patients. Of those, 11 (19%) were not treated, 26 (44%) were treated with metronidazole, and 22 (37%) were treated with atabrine. There were five documented treatment failures with each drug, and while reinfection could not be ruled out, a course of therapy with the alternative drug apparently led to successful treatment of the infection in nine of the 10 initial failures. The tenth patient was treated with both drugs, apparently successfully. Of the 22 treated children, 15 (68%) were treated with quinacrine, and three failed this treatment. Of the 26 treated adults, 19 (73%) were treated with metronidazole, and three failed this treatment. No patients were treated with furazolidone.

Followup: Fourteen of the 48 patients who were treated (29%) had no followup visits or stool exams. Another six (12%) were referred to local physicians for followup.

Coexisting diseases: Eleven of the 71 patients (15%) had multiple parasites found in their stools. These included seven recent immigrants, two homosexuals, and two patients taking corticosteroids. Other parasitic infections included three cases of *Strongyloides stercoralis*, three of ascaris, two of *Entamoeba histolytica*, one of ascaris and *Trichuris*, one of visceral larva migrans, and one of strongyloidiasis, trichuriasis, hookworm, and schistosomiasis. Among the children, failure to thrive was the most frequent coexisting diagnosis (34%); there were four cases of developmental delay and three cases of chronic otitis media. Among the adults, most carried no other diagnosis, but there were three cases of coronary artery disease, two cases of asymmetric septal hypertrophy (one with bacterial endocarditis), two cases of peptic ulcer disease, and one case each of severe rheumatoid arthritis, vasculitis, multiple myeloma, lichen chronicus, severe atopy, Goodpasture's syndrome with hypogammaglobulinemia, and at least six (20%) who carried the diagnosis of irritable bowel syndrome in their charts.

The great majority of patients with giardiasis diagnosed at our institution have a clinical syndrome characterized by the acute development of diarrhea, with from three to 20 stools per day, crampy abdominal pain, and frequent vomiting, even among adults; only 9% were asymptomatic. In comparison, series of patients infected with *Strongyloides stercoralis* and *Ascaris lumbricoides* from the same institution were largely (50-60%) asymptomatic.[8] A significant percentage of patients were not followed up with stool examinations, although this procedure is strongly recommended.

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SCIENTIFIC ARTICLE

The Question of a Cancer Epidemic: A Case Study of Cherokee County, North Carolina

George L. Carlo, Ph.D., M.Sc., Ralph R. Cook, M.D., M.P.H., and M. Gerald Ott, Ph.D., M.Sc.

OVER the past few years, there have been a number of reports in the news media of localized cancer epidemics.[1-5] Many of these have been made precipitously based on fragmented or misinterpreted scientific data. While often too broad in scope to be acceptable from a purely research perspective, they cannot be dismissed. The fear they produce, however unfounded, is a very real public health problem.

To allay this fear, public health professionals in government, industry and academia must be prepared to evaluate these claims of cancer epidemics rigorously and expeditiously using a logical stepwise research process with clearly defined decision points. Part of the process is educating the local public as to the steps that will be taken and the types of answers they can expect to receive. To obtain maximum impact, initial response time must be short. This paper presents an illustrative case study evaluating a reported cancer epidemic in Cherokee County, North Carolina.

The impetus for the evaluation was an article appearing in the March 15, 1982 issue of *Inquiry Magazine* alleging that Tordon,* a herbicide containing picloram, was responsible for a cancer epidemic in Cherokee County, North Carolina.[1] The claim was based on the apparent increase in the proportion of all deaths attributed to cancer between 1976 and 1980 in the county. The article was subsequently syndicated and published, essentially verbatim, by major newspapers throughout the United States and Canada.

In an attempt to add some epidemiological perspective to the issue, we made a rapid review of the published vital statistics information pertinent to Cherokee County, focusing on "all causes" and "all malignancies" mortality information for the years 1970 through 1980. Within one week of being apprised of the problem, a written report was made available to interested parties and meetings were held with local public health officials.[6] Provisional 1981 data subsequently were obtained and appended to the report.

During this initial review, it became obvious that a number of important facts had been omitted from the news report. One, the number of total deaths and of deaths due to malignancies were fairly small in any single year. Thus, standard errors for the associated annual rates and proportions were relatively large. Two, the "all causes" mortality rates had steadily fallen during this period; thus, the "all malignancies" proportions plotted over time did not provide an accurate picture of the "all malignancies" mortality rates. Three, the area had experienced a recent influx of retirees, but no attempt had been made to control for the changing age distribution of the population over time. Four, the local medical care delivery system had been significantly upgraded during the late 1970s by the addition of a pathologist, radiologist, internist, and two surgeons. And five, the provisional "all malignancies" mortality rate dropped in 1981 well below what would have been expected based on national rates.

The next stage of our investigation was a more detailed analysis of data over a longer period of time, 1960 through 1981. Changes and differences in the populations at risk in terms of number of people, age, race, and sex distributions were addressed through direct adjustment procedures. Formulae for these direct adjustments and the calculations of the standard errors of the point estimates are given in Appendices 1 and 2. The 1970 North Carolina population was chosen as the standard. To address possible geographic effects, the observed pattern in Cherokee County was contrasted to the other seven counties in the Western North Carolina region, and also to the observed pattern in the entire state of North Carolina.

Sources of Data

Mortality information was gathered from the North Carolina State Center for Health Statistics for the period 1960 through 1981. This period was considered large enough to address the overall time trends while small enough to eliminate the effects of any major changes in death certificate coding practices, etc. During this period, all death certificates were coded at the State Vital Records Branch, with the National Center for Health Statistics verifying the codes on the basis of a 10% random sample.

Population information was gathered from two sources. For the period 1960 through 1969, North Carolina State Center for Health Statistics data were utilized. The yearly figures were adjusted extrapolations based on the 1960 census counts. For the period 1970 through 1980, population information was gathered from the North Carolina Department of Budget, which has been the recognized repository of population data for the state since the early 1970s. The yearly figures were smooth intercensal interpolations adjusted to national trends. The data for 1981, also obtained from the Department of Budget, were extrapolations based on the trends through the 1970s. No inter-

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TABLE 1

Crude and Age-Race-Sex Adjusted * Mortality Rates† for All Causes and All Cancers 1960-1981 by Location in North Carolina

Location	All Causes No. of Deaths	Crude Rate	Adjusted Rate	Standard Error of Adjusted Rate (%)	All Cancers No. of Deaths	Crude Rate	Adjusted Rate	Standard Error of Adjusted Rate (%)
Cherokee County	3,699	981.42	782.99	2.86	597	158.40	126.88	7.50
Western North Carolina Counties exclusive of Cherokee County	24,112	849.20	760.21	1.48	3,799	133.80	114.34	3.46
State of North Carolina	971,167	859.87	853.42	0.10	151,343	131.87	128.57	0.26

* 1970 North Carolina as standard for direct adjustment.
† Rates per 100,000 population.

censal interpolations were done for the 1960 through 1970 period. Although the State Department of Health also relies on the Department of Budget for population data, at the time of our investigation the more recent population statistics had not yet been incorporated in the Department of Health system.

Results

The data presented pertain to Cherokee County, the combined experience of the Western North Carolina counties exclusive of Cherokee County, and the entire state of North Carolina.

Table 1 contains crude and age-race-sex adjusted mortality rates for all causes and all cancers for the combined years 1960 through 1981. When the all causes adjusted rate for Cherokee County is compared with the state of North Carolina rate, the Cherokee County experience is slightly more favorable (783/100,000 versus 853/100,000); however, when compared with the other Western North Carolina counties, the mortality experience is slightly less favorable (783/100,000 versus 760/100,000). The all cancer mortality picture is similar for this combined period.

To add further overall perspective, the cancer mortality experience was contrasted to the all causes mortality experience in an attempt to evaluate such potentially confounding factors as diagnostic access bias (e.g., a differential access to diagnostic procedures) and differential survival from conditions such as cardiovascular disease. In Appendix 3 are crude and age-race-sex adjusted proportions of all deaths due to cancer, by year. While the original cancer epidemic allegation was based on the crude proportions for Cherokee County during the period 1976 through 1980, age-race-sex adjustment of those proportions and a comparison with the adjusted state ratios suggests that, even within that time frame, the proportional changes for Cherokee County were not unlike those of either the Western Region or the state.

Plots of the adjusted proportions for Cherokee County and the Western Region contrasted to the state are shown in figure 1. Generally, it can be seen that, aside from differential annual variability, both Cherokee and the other Western counties show a pattern comparable to the statewide

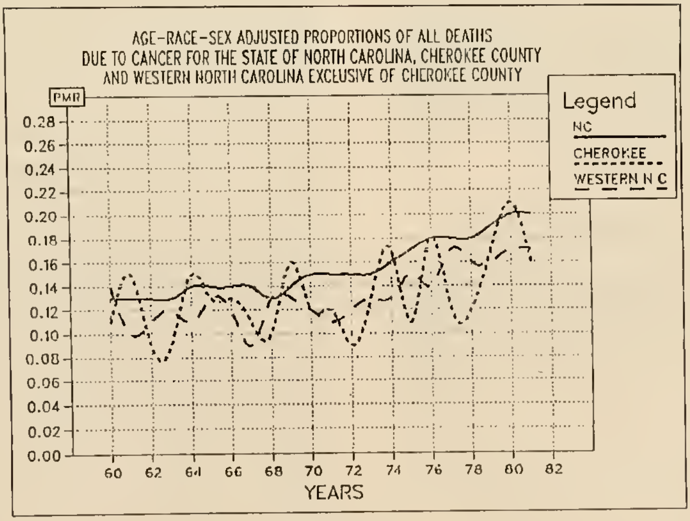

Figure 1

TABLE 2

Age-Race-Sex Adjusted* Mortality Rates† for All Causes and All Cancers for the Time Periods 1960-1964, 1965-1969, 1970-1974, 1975-1979, by Location in North Carolina

Location	Time Period	All Causes		All Cancers	
		Adjusted Rates	Standard Error of Adjusted Rate (%)	Adjusted Rates	Standard Error of Adjusted Rate (%)
Cherokee County	1960-1964	918.54	6.66	156.90	19.33
	1965-1969	835.37	5.91	127.06	17.27
	1970-1974	804.89	5.38	113.79	10.33
	1975-1979	644.68	5.13	109.59	11.11
Western North Carolina Counties exclusive of Cherokee County	1960-1964	766.88	3.49	101.07	6.28
	1965-1969	862.82	3.21	109.69	6.02
	1970-1974	753.60	2.70	118.59	9.83
	1975-1979	695.11	2.95	122.56	6.82
State of North Carolina	1960-1964	882.36	0.23	114.62	0.64
	1965-1969	884.45	0.22	120.61	0.59
	1970-1974	857.44	0.21	131.65	0.53
	1975-1979	766.01	0.21	141.32	0.49

* 1970 North Carolina population as standard for direct adjustment
† Rates per 100,000 population

pattern. It appears that if biases such as diagnostic access are affecting the observed patterns, they are not doing so in a differential manner. Because of the marked variability and resultant instability in annual rates due to the relatively small numbers of deaths in specific counties, data were combined in five-year aggregations in order to further evaluate the mortality trends over time.

Table 2 contains adjusted mortality rates for all causes and all cancers for Cherokee County, the Western Counties exclusive of Cherokee County, and the state for the periods 1960-1964, 1965-1969, 1970-1974 and 1975-1979. The all causes mortality in Cherokee County has decreased over time more rapidly than in the other Western Counties or in the state. The cancer mortality has decreased over time in Cherokee County; in the other Western Counties and in the state, cancer mortality rates have increased, with the statewide increase being larger than the increase in the Western Counties. The magnitudes of the differences are given in table 3, which contains rate ratios for cancer mortality in Cherokee County to both the state and the Western Region. Evaluation of the 1980 and 1981 yearly data did not suggest the pending emergence of trends or patterns inconsistent with the results observed through 1979; furthermore, evaluation of data for five-year groupings, working backwards from 1981, had no impact on the overall interpretation. As a final check on the analytical approach, the data were evaluated utilizing the indirect adjustment procedure (state rates as the standard); this also had no impact on the overall interpretation.

TABLE 3

Age-Race-Sex Adjusted* Rate† Ratios for Mortality Due to All Cancers by Time Period and Specific Location in the State of North Carolina

Location	Time Period	Rate Ratio to State	Rate Ratio‡ to Region
Cherokee County	1960-1964	1.37	1.55
	1965-1969	1.05	1.16
	1970-1974	0.86	0.96
	1975-1979	0.78	0.89

* 1970 North Carolina population as standard for direct adjustment.
† Rates per 100,000 population.
‡ Western North Carolina Counties exclusive of Cherokee County.

Discussion and Conclusions

Evaluation of the presence of a chronic disease epidemic (e.g., cancer) is an arduous task, with no commonly accepted methodologies readily applicable. The approach described here, chosen for both its simplicity and practicality, involved the utilization of relatively straightforward adjustment procedures on existing data and a nonstatistical evaluation of trends and patterns. There are, however, additional constraints of this analysis which should be mentioned.

An underlying assumption, arising from the original report of a generalized cancer epidemic, was that an evaluation of all cancer mortality would give an indication of the introduction of a new carcinogen. In reality, we know that cancer is a collective term for several distinct diseases with distinct etiologies. Thus, we would not expect any environmental insult to impact on all cancers equally. On the other hand, with relatively small populations and numbers of deaths as those studied here, an abrupt or profound change in mortality from a specific cancer could be expected to increase the all cancer mortality rate to some degree.

A parallel assumption was made regarding the various age-race-sex groups. It was felt any new environmental carcinogen would impact similarly on males and females, whites and non-whites, and that the direct adjustment procedure would produce results indicative of an effect, given that one existed.

The choice of the standard population is also an important consideration in this type of evaluation. We chose a regional population, North Carolina, during a census year, 1970, at the approximate midpoint of the evaluation period.

Finally, the utilization of population information derived in different manners (1960-1969 extrapolated; 1970-1980 interpolated; 1981 extrapolated) might have had some impact on the results of the analyses. For the 1970-1980 period, both interpolated and extrapolated data were available, the former from the state Department of the Budget, the latter from the North Carolina State Center for Health Statistics. Based on discussions with state officials concerning the relative validity of the two data sets, the decision was made to use the interpolated data. Unfortunately, interpolated data were not available for the 1960-1969 time period. A comparison of 1979 data from Cherokee County, which had been derived by extrapolation, with similar data derived by interpolation, revealed that extrapolation underestimated the population over age 50 by almost 2%. It is difficult to estimate the exact impact of using the extrapolated population statistics; however, in this analysis they are most likely to have produced the greatest aberrations in rates during the latter part of the 1960s, the years furthest from the 1960 census.

Overall, within the constraints of this methodological approach, the following conclusions can be drawn:

1. there is currently no indication of excess cancer mortality in Cherokee County with respect to either the state of North Carolina or the other western counties;
2. the historical decline in all causes mortality in Cherokee County has paralleled the decline in the other western counties and has been greater than the decline in the state;
3. the historical pattern of the proportion of all deaths due to cancer in Cherokee County has been similar to the patterns in both the other western counties and the state;
4. an historical decline in cancer mortality has occurred in Cherokee County while an increase in cancer mortality has occurred in both the other western counties and the state.

These findings, taken together, do not support the contention that there is a cancer epidemic in Cherokee County, North Carolina. Given the alternative was found, further work would still be needed to ascertain the probable cause. The next step would have been to evaluate past exposures, family histories, etc., of the cancer patients.

Rapid response to reports of cancer epidemics depends in large part on ready access to valid information. In the United States, data on morbidity and environmental exposures are fragmentary or missing for the general public. Population statistics and mortality data provide the best combination of validity and feasibility for such initial evaluations of cancer epidemics purported due to widespread environmental agents. If elevations in mortality rates are found, they can be used to formulate further research strategies and to inform the local population as to the magnitude of the problem. If no elevations are discovered, they can be utilized to allay the public's fear.

When using mortality rates, the investigator must be aware of basic epidemiological principles. Due consideration must be given to the characteristics of the underlying data to assure that bias is not inadvertently introduced into the analyses and interpretation. Age, race, sex and other potential confounders must be addressed. When selecting a period of observation, the outcome of interest, in this case the chronic disease cancer, and the number of events also must be considered. Trying to interpret inherently variable data over too short a time span will either fail to detect real problems or, as is the case in Cherokee County, lead to reports of epidemics where none exist.

Acknowledgment

The authors wish to express their appreciation to the numerous representatives of the North Carolina State Center for Health Statistics and the North Carolina Department of Budget, Drs. C. Gregory Smith and Roger Grimson, North Carolina Department of Health, and Dr. Carl Shy, University of North Carolina School of Public Health, without whose assistance and advice this project could not have been accomplished.

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APPENDIX 1

Formulae for Calculation of Direct Age-Race-Sex Adjusted Mortality Rates and Standard Errors of Those Rates

$$\text{Adjusted Rate} = \frac{\Sigma N_i r_i}{\Sigma N_i}$$

$$\text{Standard Error} = \sqrt{\text{Variance (adjusted rate)}} \simeq \sqrt{\frac{\Sigma (N_i^2 r_i/n_i)}{(\Sigma N_i)^2}}$$

Where the r_i are the age-race-sex specific mortality rates in the study population, the N_i are the age-race-sex specific standard population sizes and the n_i are the age-race-sex specific study population sizes.

Source: Adapted from Armitage, P: Statistical Methods in Medical Research. Blackwell Scientific Publications, London, 1974.

APPENDIX 2

Formulae for Calculation of Direct Age-Race-Sex Adjusted Proportionate Mortality Ratios and Standard Errors of Those Rates

$$\text{Adjusted Rate} = \frac{\Sigma D_i r_i}{\Sigma D_i}$$

$$\text{Standard Error} = \sqrt{\text{Variance (adjusted ratio)}} = \sqrt{\frac{\Sigma (D_i^2 r_i q_i/d_i)}{(\Sigma D_i)^2}}$$

Where the D_i are the age-race-sex specific numbers of deaths due to all causes in the standard population, the d_i are the age-race-sex specific numbers of deaths due to all causes in the study population, the r_i are the age-race-sex specific proportions of deaths due to a specific cause in the study population, and the $q_i = (1 - r_i)$.

Source: Adapted from Armitage, P: Statistical Methods in Medical Research. Blackwell Scientific Publications, London, 1974.

APPENDIX 3

Crude and Age-Race-Sex Adjusted* Proportions of All Deaths Due to Cancer by Location in North Carolina

	Cherokee County			Western North Carolina Counties Exclusive of Cherokee County			State of North Carolina		
Year	Crude Proportion	Adjusted Proportion	Standard Error of Adjusted Proportion (%)	Crude Proportion	Adjusted Proportion	Standard Error of Adjusted Proportion (%)	Crude Proportion	Adjusted Proportion	Standard Error of Adjusted Proportion (%)
1960	.13	.11	18.8	.15	.14	8.2	.12	.13	1.4
1961	.15	.15	14.5	.12	.10	9.9	.12	.13	1.4
1962	.12	.09	21.4	.15	.11	7.9	.13	.13	1.3
1963	.13	.09	19.9	.14	.12	8.8	.12	.13	1.3
1964	.13	.15	18.9	.16	.11	8.3	.13	.14	1.2
1965	.15	.13	16.6	.13	.13	7.6	.13	.14	1.2
1966	.14	.13	18.8	.14	.12	9.2	.13	.14	1.2
1967	.15	.11	17.8	.12	.09	8.2	.14	.14	1.2
1968	.08	.10	27.7	.14	.13	8.2	.13	.13	1.2
1969	.15	.16	11.9	.14	.13	7.7	.14	.14	1.2
1970	.15	.12	16.8	.14	.12	7.7	.15	.15	1.1
1971	.15	.12	16.3	.13	.11	7.8	.15	.15	1.1
1972	.13	.09	18.8	.14	.12	8.3	.15	.15	1.1
1973	.14	.13	21.0	.15	.13	6.6	.16	.15	1.1
1974	.22	.17	14.6	.16	.13	7.9	.16	.16	1.0
1975	.16	.11	16.9	.16	.15	6.7	.17	.17	1.0
1976	.17	.18	12.7	.17	.14	7.4	.18	.18	1.0
1977	.16	.12	18.6	.19	.17	6.0	.18	.18	1.0
1978	.16	.12	16.8	.19	.16	5.9	.19	.18	0.9
1979	.26	.17	12.6	.20	.16	5.8	.20	.19	0.9
1980	.27	.21	10.2	.21	.17	5.8	.20	.20	0.9
1981	.23	.16	14.5	.20	.17	6.3	.20	.20	0.9

* Directly adjusted to the age-race-sex specific numbers of deaths for the State of North Carolina, 1970.

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SPECIAL ARTICLE

How Much Does Aphasia Contribute to the Localization of Language?

Macdonald Critchley, C.B.E., M.D., F.R.C.P.

AT the outset of our discussion it is advisable to consider the nature of man's faculty of language, before proceeding to inquire into the circumstances which may bring about a decline in its efficiency.

To begin with, let me stress the inherent specificity of language. Articulate speech is something that is the prerogative of *Homo sapiens*. Speech is his adjunct and his privilege. There is not, and there never has been, a race of men, however barbarous or underprivileged, that does not have the ability to speak. The alleged *Homo alalus* (man without speech) is a myth. In the phylogenetic scale speech was a late-comer, though at what precise point in the transition between ape and man we do not know and never will.

It is safe to assume that Magdalenian man who adorned the walls of the various caves in Santander certainly used language in the true sense of the word. That takes us back 10,000 years at the very least. Can we go further: were Neanderthal man and *Pithecanthropus* equipped with articulate utterance and did they operate a symbol-system; or were they restricted to a scant repertoire of crude grunts and gestures, communicative perhaps but not to be rated as language?

Today, about half of the world's population has also acquired an ability to record and perpetuate information by means of graphic marks.

All in all, language develops in man so as to become a firmly built-in aspect of personality. Thus it constitutes a vital modality of thinking and of comportment. It follows, moreover, that language is not only the prerogative of *Homo sapiens* but is also something which is specific to each and every individual. This property we recognize under the term "idiolect." In other words, no two persons have a completely identical word-bank.

It would therefore seem a vain pursuit to seek to segregate such a fundamental, all-pervading process within a sharply demarcated congerie of nerve cells of the brain. That most attractive of American linguists, Sapir, asserted that language as such is not and cannot be definitely localized, except in that general and rather useless sense in which all aspects of consciousness, all human interest and activity, may be said to be "in the brain." And yet experience shows that in most persons one-half of the brain takes precedence over the other as far as this faculty is concerned. Why this should be so we cannot confidently say: it would appear to be somehow related to manual preference; as in *La Traviata* the matter is "*mysterioso, altero* . . . ."

Here already then is localization of a sort, or so it might be argued. Forty years ago, however, I was already suggesting that the minor hemisphere also played some part in language-function. At the time my colleagues were skeptical or quite uninterested but since then, of course, this concept has become received like a prodigal son into the family of respectable neurologists.

Obviously the cerebral processing of the faculty of language is a problem quite different from the detection of aphasia-producing lesion. With slowly progressive brain atrophy, a condition made clinically manifest by dementia, language is often upset. What follows may closely resemble a dysphasia and yet it is deemed inappropriate to employ the term "aphasia" when referring to the speech disorders resulting from diffuse brain pathology.

Conventionally, therefore, one focuses attention upon cases of aphasia in the strict usage of the word, and studies the consequences of focal rather than diffuse lesions somewhere or other within the so-called "speech area." This practice began 120 years ago with Broca's exhibition of the brain of a youngish man of weak intellect who had a severe impairment of speech, something he called "aphemia." His case triggered the practice of correlating the site of a lesion with the pattern of the resulting speech defect, and was the start of the era of localizationism.

And yet, in retrospect, this way of thinking took origin in a misconception. The site of this patient's lesion was declared to be at the foot of the third frontal convolution, a region which thereafter became known as "Broca's area." In fact, it extended far beyond. The scar was obvious to the naked eye as an elongated structure tracking way back through the temporal lobe. Not for many decades was a horizontal section made into this brain, and when it was eventually performed it demonstrated the considerable extensity of the lesion. Only a year or two ago was the specimen examined by a scintiscan.

Over the last century neurologists isolated a muster of linguistic defects which they proclaimed to be "Broca's aphasia," and this is what is being taught today. And yet Broca's original patient was clinically quite different. He was virtually bereft of speech, his sole communicative tool being the meaningless and recurring fragment of jargon, "tan-tan."

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Over the past 100 years neurologists have spoken and written millions of words dogmatizing upon matters of localization. They have not always agreed by any means. There was a tussle between those who looked for purely cortical lesions and those who were concerned with the nerve tracts — the disconnectionists in fact — linking one area of the brain with another. Despite a lack of agreement as to their views upon clinicopathological correlation, the principal trait of these rigid localizationists has been dogmatism. Students listened to them attentively because their opinions were attractive and didactically tidy. But all great men know how little they know, in comparison with what they do not know.

And yet over and over again quiet voices were being raised throughout this period in faint protest. Thus Hughlings Jackson never referred to the precise situation of lesions which were associated with "disorders of expression," to employ his term. Henry Head was extremely reluctant to play the part of a localizationist. In Philadelphia Allen Starr pointed out that the same pattern of aphasia could follow lesions differing widely in position.

In this way neurology became involved in a hundred-years war between the localizers and the non-localizers. May I make the challenging submission that the best brains, the most thoughtful, wise and philosophically minded aphasiologists inclined to the latter group?

One of my cynical colleagues used to say that cerebral localization is not a science but a sport and, in the case of brain tumors, a blood sport. Some neurologists were far better at the game than others and, as Tilney once said, aphasia is the touchstone that measures the skill of a diagnostician and, we may add, distinguishes the men from the boys.

But, you may say, what is the merit of becoming embroiled within this battle of words, for today there is no problem. A technical assistant can now identify and pinpoint the aphasia-producing lesion in 15 minutes by means of a computerized scintiscan machine.

Let us pause a moment to consider the place of the brain scan in aphasiology. How much wiser are we because of this precision tool? At least we can direct the surgeon where to plan his scalp wound, what to expect, and how much time to assign for his task. Perhaps we can even point out that the lesion is embolic and not neoplastic and, if operate he must, his incision will have to expose the carotid artery in the neck.

Let us admit our shortcomings. In some respects this brain scan has been disadvantageous to our discipline. It has rendered largely unnecessary the deeply probing amanesis and the protracted clinical scrutiny. We may be tempted to dispense with the clinical skills derived from experience, intuition and judgment. Even though we now possess some confidence as to where the fault is located, do we understand any more the mechanism of the aphasiac's residual use of words? Never is he absolutely mute. What about the fragmentary speech which remains? How? And why? These are questions which remain unanswered.

Is the site of the aphasia-producing region of the brain identical with the territory wherein language is believed to be organized? Not necessarily so. We lightly refer to a "speech area." Don't we really mean the "place of speech-vulnerability?" Shouldn't we logically drop the term "speech centers" in favor of "centers of destruction?"

When a mild aphasiac finds himself temporarily at a loss for the opportune word, what has gone wrong? Perhaps if he diverts his attention for five minutes or so, the missing word will turn up. How do we explain this? Does such embarrassment not happen to all of us to a minor degree? And yet our faculty of speech is presumably intact. When a paraphasic patient inadvertently says *chair* when he means *table*, *black* instead of *white*, what is happening? Perhaps it occurs when he reads aloud as well as in conversation. He may indeed substitute a near-equivalent and read *healthy* when the word before him is *strong; happy* instead of *gay*. We sound impressive when we gravely speak of this as deep dyslexia, but how much wiser are we?

Why is it that the stream of voluble speech of a so-called fluent aphasiac is abruptly halted as soon as he is asked to name a common object directly in front of him? What causes this holdup? Still more, how does he manage to emit halting terms that tell us he knows the identity of the object he cannot name. He evokes a series of circumlocutions or synonyms to explain what the article is used for. He makes mimic movements to proclaim his recognition. He may even recall its equivalent term in another language. Irritably, he rejects alternatives that are inappropriate. But if the missing word is included in a written list of terms shown him, instantly he will recognize it and confidently say it aloud. This is the well-known "deblocking phenomenon." He may even perseverate and employ the same word when shown some other common but quite different article. In his mental wrestling to find the right word he may previously have had some shadowy mental image of what the word looked like, that it was a very short word and not a long one, and that it started with such and such a letter of the alphabet. Where does all this half-knowledge come from? How does this anomia or naming defect differ from the commonplace "tip of tongue" phenomenon that every one of us experiences now and again? The brain scan will not answer all these queries.

Incidentally, in very mild cases of aphasic difficulty in word-finding to order, I have observed an interesting phenomenon. As if to compensate for a hesitancy in coming out with the appropriate word, the patient may over-react. Instead of giving an accurate, staccato and terse reply, the patient will go into circumstantial details which are barely relevant. Thus, shown a watch, he may say "a wrist watch . . . and a particularly handsome one if I may say so." A woman confronted with a cigarette lighter may identify it, but go on to proclaim "It's a beauty. My husband has one like it . . . but then he's got everything." This is the phenomenon of "gratuitous redundancy," which I regard as a pre-aphasic sign of impending speech impairment.

Indeed the paraphasic errors themselves are capable of linguistic analysis but morbid anatomy does not help us here. According to Jakobson, one of the first to apply linguistics in aphasiology, in aphasiacs there are disorders of continuity and disorders of contiguity. The word substitutes are important, some being in the nature of a metaphor, others of metonymy. In the latter event, the error might be paradigmatic. Mistakes of all these types may be noted whether an aphasiac is speaking spontaneously though ineptly, when he is naming a particular article, and also when he reads aloud. Jakobson's worthy attempt to better our imperfect classifications has not lived up to its initial promise.

Let us proceed and compare another variety of aphasia, much more severe than anything resembling the "tip of tongue" phenomenon. Here is an aphasiac who is far from being taciturn. On the contrary, he is garrulous, voluble, uninhibited, euphoric. He does not behave like a man struggling to express himself, for he is unabashedly prolix and yet unintelligible. A simple question evokes a torrent of words, mostly but not wholly jibberish. The brain scan shows us a sizable defect in the temporal lobe, but it tells us nothing as to the source of this spate of jargon. It does not explain the patient's own ignorance of his speech defect, nor why he gesticulates so extravagantly; nor why he writes as readily and as inaccurately as he talks; nor his behavior when a tape recording of his speech is played back to him.

Let's go on.

Let us compare two aphasic patients, a man and a woman, both in their 50s, both mildly hypertensive. Both had sustained a stroke some months before followed by a right hemiparesis and a serious loss of speech. Initially confused, both became once more alert mentally. Both could follow the conversation of their visitors and obey the instructions of the nurses. Both were able to cope silently with simple reading material but it was a tiring matter and they preferred to watch television.

In both, the scintiscan demonstrated a lesion, though not necessarily identical either in size or in place.

These two patients are severe monophasiacs. That is to say, their speech is limited to a solitary utterance. All that the man can say is "yes," while the woman's sole snippet of speech is "no."

They are fully aware of their plight and are intensely embarrassed. But both have learned the trick of altering the prosody of their monosyllable so as to make the "yes" and the "no" represent many different wishes and ideas. They can cause these two particles to indicate either affirmation or negation. With this verbal remnant each can imply "I want" or "I don't want"; "please" or "thank you"; "hello" or "go away"; "I want to get up" or "let me go to sleep."

What a host of questions these two patients evoke. Out of the 10,000 or so words which made up their premorbid vocabularies, why is it that only one solitary word survives? Why does the man say "yes" and the woman say "no"? It might just as well have been the other way round. What quality was attached to these vocables to have made them verbal survivors: both expressions are short, trite, and oft-used, but so are a great many other monosyllables which are no longer available. Is personality a factor: could it have been that prior to the stroke the male patient was a simple, easy-going type, a "yes-man" in fact? And was the woman a more difficult, somewhat aggressive type? The idea is a specious one but difficult to substantiate.

What of the underlying pathology? At one time some neurologists would visualize a sort of cortical mosaic with its own particular piece representing acquiescence, obliterated by an infarction so as to leave the recurring utterance "no" as a residual verbal stereotypy. Others might equally well have imagined a more extensive lesion sparing a tiny cluster of nerve cells representing in the one case a "no" and in the other a "yes."

Today a brain scan would probably demonstrate in both cases widespread ischemic areas and yet dead cells have no function. "Dirt in the brain," as Jackson said, cannot possibly emit a "yes" or a "no." The most that can be said is that they permit those neurons that are intact to operate in an uncontrolled, disorderly fashion, as when pandemonium breaks out in a classroom if a schoolmaster is suddenly called away.

Incidentally, the brain scan will show that the ischemic region corresponds very closely with that found in the case of the jargon aphasiac. And yet the clinical pictures have only one feature in common, namely, severity.

We can likewise recall many other monophasiacs whose recurrent utterance was confined not to a simple "yes" or "no" but to something more elaborate. Often it is semi-interjectional like "Oh my God!," "Help," "Sacré nom." Not uncommonly it is an oath, blasphemous or obscene. Or it may be a commonplace like "please," "thanks," "goodbye," "hello." Sometimes, however, the phrase is quite an unexpected one, like "ace of spades," "that's mine," "list complete," "Bon soir, les choses d'ici-bas," or even a reiterated piece of nonsense like "Yabby," "me me, committy me pittimee." Broca's original patient could say nothing but "tan-tan."

How on earth did each one of these verbal stereotypes breach the aphasiac's fast-locked lexicon and become exteriorized? Localization has not given us the answer. Hughlings Jackson, who originally described this phenomenon, believed that the words that made up the recurring utterance were those associated with the victim's thoughts at the time of the stroke, and represented what it was that he was about to say before losing consciousness. Jackson called it a "stillborn proposition." His colleague, William Gowers, however, believed that the words of a recurring utterance were in fact the last ones the patient had emitted before coma ensued. Both ideas could be supported by exploring the circumstances in which the stroke took place. On the whole, I rather favor Gowers' hypothesis.

In one of his clinical lectures Gowers referred to an aphasic patient whose recurrent utterance was "Tons of it . . . Tons of it." In an unguarded moment Gowers asked "Tons of what, my poor man?" Whereupon he received an immediate reply which he described as "terse: of alvine significance, unfit for ears polite."

I have dwelt upon this symptom of recurrent utterance because it illustrates so well my argument that the discovery of the exact whereabouts of the dead cells does not explain the clinical picture. The problem is not a materialistic one, for it lies deep in the dynamics of language. This was said 120 years ago and it never has been refuted.

The same remarks also apply to what Jackson called the "occasional utterance" of an aphasiac. Thus Trousseau's patient who was virtually speechless, once when visitors came, accidentally dropped his handkerchief. A lady picked it up for him and he promptly said "Merci" before reverting to his state of silence. A patient of mine, almost mute, was seated near his wife who suddenly gave a loud sneeze. Her startled husband immediately exclaimed "Bless you!" and that was all.

Surely it is now time for us aphasiologists to relax our efforts to track down dead cells in our patients, and instead to investigate the mechanism whereby a particular patient at a particular moment contrives to utilize those areas of the brain that are intact, so as to deal as best he can with the situation confronting him. Incidentally, on another occasion the same state of affairs may evoke a different response. He may react well to this person but not to that one. His efficiency may fluctuate considerably according to such variables as hunger, fatigue, nervousness, ill health or pain.

When considering the performance of an aphasiac we must not look upon the brain as a piano, each ivory note corresponding to a particular word or phrase. A better comparison would be a violin with all strings broken except one, upon which a Paganini might attempt to play a melody.

Three factors are obvious, namely, the site of the lesion, its size and its rate of growth. But these are not the only variables, perhaps not even the most important ones. For example, the age of the patient may be highly significant. If the victim is a child or a young adult, the severity is less and the prognosis is better than if the lesion affects tissues which are aged, tired or sclerotic, a brain which has already lost its functional virginity, in fact.

Most intriguing factor of all is the linguistic status of the victim before his speech ever came to be damaged. This factor, intangible though it may be, may well prove crucial in its import. Prior to the stroke was the victim ill-educated and barely literate? Or was he a highly educated man of letters, familiar perhaps with other languages besides his native tongue: was he an avid reader; did his vocabulary correspond with the size of his library and be measurable in terms of tens of thousands of items?

Premorbid literacy must surely exercise an effect upon the nature and severity of the resulting aphasia. And yet we are by no means confident whether the influence of literacy is clinically suspicious or not. Is a lord of language when struck down by a stroke at an advantage or disadvantage? Such linguistically endowed evidence as we possess is both anecdotal and contradictory. Dr. Samuel Johnson's speech impairment was mild, while by way of contrast the aphasias of the poet Baudelaire, of Lenin the firebrand orator, and of the writer Mencken were crippling and extreme. Perhaps in such circumstances the size of the lesion is important. A small area of defect may prove devastating to one who is of mediocre literacy, while a person whose vocabulary was unusually rich may retain the ability to conceal his mild hesitancy by calling upon his impressive word-bank of synonyms, alternatives, circumlocutions and paraphrases. But on the other hand, a bigger lesion may prove more catastrophic than in someone who had never been a scholar. Perhaps when it comes to literacy, genius subsumes vulnerability. We simply do not know.

No two aphasiacs are identical. In part this derives from the fact which I always emphasize, namely, that no two individuals possess quite the same amount of words, nor the same ability to utilize their verbal weapons. This is the "law of linguistic specificity," which is another way of saying what I emphasized earlier, namely, that we all have personal idiolects. It should be possible for an expert to identify the authorship of a text, provided sufficient written material were available.

To exemplify how closely words and speakers are coupled, let me quote Professor Blanshard who proclaimed: "To say that Major André was hanged is clear and definite; to say that he was killed is less definite, because you do not know in what way he was killed; to say that he died is still more indefinite because you do not even know whether his death was due to violence or to natural causes. If we were to use this statement as a varying symbol by which to rank writers for clearness, we might get something like the following: Swift, Macaulay and Shaw would say that André was hanged. Bradley would say that he was killed. Bosanquet would say that he died. Kant would say that his mortal existence achieved its termination. Hegel would say that a finite determination of infinity had been further determined by its own negation."

There is yet another quality of written language which must surely affect its vulnerability when buffeted by disease. I refer to the purely aesthetic properties — what the prophet had in mind when he referred to "apples of gold in pictures of silver." This is something which when experienced is visual but more especially auditory. It overpowers the reader when "a passage of print suddenly becomes a line of blazing torches with an intimation of banners and trumpets closely following." There are some favored souls who are forever under the spell of the sheer magic of words. Their euphony, their beauty, their mystery capture them, causing them to take pleasure in selecting, matching and linking them like a lapidary lovingly assembling an exquisite piece of jewelry. Dylan Thomas when asked how and why he became a poet, replied "I like to treat words as a craftsman does his wood or stone or what-have-you, to hew, carve, mould, . . . polish and place them into patterns, sequences, sculptures, figures of sound expressing some lyrical impulse, some spiritual doubt or conviction, some dimly realized truth I must try to reach and realise."

Such a sensitive preoccupation with words must, I submit, be a major factor in determining the clinical picture of an aphasia and its prognosis. Whether of favorable or unfavorable omen I am uncertain.

Over a century ago Jackson distinguished "superior" from "inferior" levels of language, the latter being more resistant to aphasia-provoking lesions. This causes me some apprehension about the outlook in a patient who is a literary stylist and who becomes aphasic.

From my tentative remarks, it must be apparent to you that when I think about aphasia I am more interested in the speech that is spared than in the mere location of burned-out cells, debris which constitutes little more than a hole in the brain.

This I suppose puts me in the camp of those who are more intrigued by the living than by the dead.

In conclusion, let me here quote what that wisest and shrewdest of clinical doctors — Lord Dawson of Penn — said to his students in 1929:

> Disease is not a standardized product; for thank Heaven, man preserves his individuality in sickness as

well as in health; otherwise it would be an uncommonly dull world to live in. Therefore if you are taking a history and are not a little bored at the tedium and inclined to say "Why cannot the lab do this for us?", my urging to you is "Don't." Take the trouble. For every moment of it you will be rewarded. There you are learning how symptoms vary and what they stand for, not only in the abstract but in *that* patient. You are gaining insight and perception and not only knowledge but understanding, and you are thinking of life not in terms of remedies but in terms of healing.

SPECIAL ARTICLE

Heart Transplants and the Legal and Ethical Problems Surrounding Organ Retrieval

William W. Toole and James F. Toole, M.D.

Because of the many ethical ramifications of research sponsored by the American Heart Association in 1966, the AHA established a Research Subcommittee to consider ethical guidelines for clinical investigation. The first meeting was held at the Sedgefield Inn in Greensboro, September 18, 1967, with Dr. Toole as Chairman. Two months later, on December 3, 1967, Dr. Christiaan Barnard performed the first human heart transplant.

The Ethics Subcommittee convened in emergency session shortly after this ground-breaking procedure to establish an AHA position concerning the ethical questions involved in viable organ donation. Soon it became apparent that our entire nation had to become involved in questions of medical ethics surrounding organ donation.

THE demand for viable organs, particularly the heart and kidneys, grows with the success of these transplant operations. In 1970, the perioperative mortality of cardiac allografting was 85%. Fewer than half of the survivors lived more than two years.[1] Now, with the advent of tissue typing and immunosuppressive drugs, the one-year survival rate is 63%, with a gradual attrition to 40% over the course of five years.[2]

According to Joan Miller, R.N. of the Stanford University cardiac transplant team, "In the last five years . . . more centers are beginning to do cardiac transplantation as improvements in immunosuppressive therapy reduced the risks (of the procedure). In 1981 alone, more than 100 procedures were performed (throughout the country)."[3] Though Ms. Miller is properly impressed with the number of operations, 100 procedures do not scratch the surface of the need.

Of the 250-300 patients referred to Stanford University annually, only 15% are given the heart transplant. Stringent criteria designed to avoid mistakes of the past are in part responsible for this low acceptance rate. Yet another factor plays an important role — the scarcity of resources.

In 1973, a study estimated that there might be a need for 22,000 heart replacements a year.[4] Recent estimates suggest that patients who could benefit from heart replacements may number as many as 50,000.[5] The 1973 study projected that there might be 12,000 heart donors annually — primarily traffic victims and suicides. In North Carolina there were 1320 traffic deaths for the year 1982. This represents a difference of 661 lives saved from traffic deaths on North Carolina highways over the past ten years. This statewide reflection of a national highway trend means that the need for hearts will continue to be greatly in excess of availability.

Though the wide gap between availability and need dictates a need for artificial hearts, there is agreement that live hearts are better than artificial ones. Barney Clark's artificial heart ran for 112 days and cost between $250,000 and $1,000,000, depending on whose estimate is used. Cardiac allografting is now estimated to cost $65,000, a paltry sum when compared with the staggering cost of the Jarvik-7.[6] Currently, federal research grants help defray a portion of the expenses for allografting. Insurance may or may not help pay some of the cost, depending upon whether the procedure is classified as experimental or therapeutic. If the procedure is viewed as experimental, most policies will not cover. A hidden personal expense is the family cost of living near the hospital for a year or more while the recipient undergoes treatment at one of the relatively few centers performing such surgery.[6]

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In time, assuming that cardiac allografting moves out of the experimental category and becomes accepted therapy, the public will demand access to these new techniques for prolonging life. Regional centers will most likely be developed to handle what has already been defined as a growing need for the operation. Such centers will help maintain a relative ceiling on hospital costs, while forcing a centralization of scarce resources.

If regional facilities do become established to meet this need, hearts will necessarily be harvested from a network of hospitals. Already the Stanford team has had donor hearts sent to it from as far away as 550 miles. The heart can survive in excellent condition for three and one-half hours in a saline solution, maintained at 10 degrees Celsius and so far forty have been shipped in this way.

With the growing demand for viable organs from many miles away, harvesting physicians may inadvertently disregard the emotional needs of the donor's family in an effort to respond to the need of a potential recipient. Physicians must be careful that they do not offend the sensibilities and legal rights of bereaved families.

To translate a theoretical issue into a concrete problem, consider a hypothetical situation. A 24-year-old healthy man is admitted with massive post traumatic cerebral hemorrhage. His neurologist, using North Carolina statutory criteria, establishes that the patient is brain dead. Among the patient's effects is a North Carolina organ donor card. After tissue typing, the patient is found to be a prime candidate for cardiac donation.

With the advent of devices capable of substituting for or preserving the basic functions of most organs, man has become able to prolong what can only be termed an *illusion* of life. The external appearances are such that our society is no longer certain when a patient has died because life support systems can keep the heart pumping, the kidneys functioning and the lungs breathing for months after brain function has ceased.

A large segment of the population and many physicians still consider the heart to be the organ that marks the seat of life, despite the legal definition that death can be determined by criteria applied to the brain. Neurologists believe, and North Carolina law seems to concur, that the body is a system designed to support brain function. Still, removal of a beating heart deeply disturbs families and medical professionals alike. Until the concept of brain death is commonly accepted, organ retrieval will not be a fully accepted idea. Physicians are called upon to educate society, to lead it from the traditional to more modern concepts regarding the philosophy of human life and the qualities which improve it. But before physicians can educate society, they first must come to terms with their own feelings about brain death.

Jennett writes: "It seems that the public finds it easier to accept the concept of brain death than does the medical profession."[7] In 1982, Kimball wrote, "Most nurses refuse to accept the patient's death until the last moment when the respirator is turned off."[8] Clearly health professionals must assure themselves that their patient is in fact dead when the brain ceases to function. The North Carolina statute regarding the determination of death requires that either a) the patient exhibit the commonly accepted signs of death, i.e., cardiac and respiratory failure, or b), *all functions of the brain, including brain stem, have ceased.*

Once the potential organ donor is dead, organ retrieval can begin. The North Carolina organ donor card, if properly witnessed, acts as a codicil to the patient's will, legalizing the immediate removal of anatomical parts without need for probate. Though there is no requirement to secure the informed consent of the next-of-kin for this procedure, courtesy and sensitivity require that the patient's family be informed if at all possible.

If, however, the patient's desire to be an organ donor is known only through an indication on his North Carolina driver's license, the medical harvester enters an as yet unsettled legal area. In the opinion of some attorneys, signifying "yes" as an organ donor on the North Carolina driver's license is a codicil to a will and legally binding as such. Others believe that it is merely a statement of intent, a "living will" meant to be a guide to the next-of-kin, who must indicate their decision through document, telegram or recorded phone message.

Permission for organ retrieval may be granted by the next-of-kin only in the absence of contrary intention on the part of the donor. The spouse, adult son or daughter, parents, or legal guardian may make the anatomical gift as long as there is no contrary statement by a member of the same or prior class.

However, no one is under obligation to accept the anatomical gift. Nor do physicians have a duty to harvest organs even though the legalities are in order.

In all cases it is prudent to consult with the next-of-kin before harvesting. Even if the deceased has indicated a desire to be an organ donor, the family can very easily get a temporary restraining order on the execution of the will, which will delay matters beyond the time appropriate for organ removal, essentially nullifying the intention of the donor.

After removal of the desired organ(s), custody of the remaining parts reverts to the family or agent of legal responsibility for the disposal of the remainder. By North Carolina law, the physician certifying the time or fact of death may not participate in the removal of organs from the body.

In the specific case of corneal tissue removal, harvesting may be made without the approval of the next-of-kin under certain instances. North Carolina law states that if a reasonable attempt by the medical examiner to determine the next-of-kin has failed and the next-of-kin are believed not to exist, and that there is no known objection to removal and removal of the tissue will not affect future autopsy or unreasonably scar the facial appearance, then corneal removal may be done forthwith. However, all other tissue removal must either be properly stated in a will or receive the approval of the next-of-kin.

Among ethicists, there is agreement that the treating physician should not be the person asking for permission from the family because some conflict of interest with inclinations to the potential heart recipient and not to his patient. For this reason, responsibility for seeking such permission should fall upon another physician. This procedure may have its advantages, but often it is cumbersome. Successfully harvesting organs depends upon getting things done quickly. But in more than a few cases, getting family permission means spending a great deal of time with the family as they struggle to understand their relative's death.

A doctor would no doubt try to address all the issues raised by the patient's family, yet in the final analysis he will most likely be unable to devote the time necessary to the patient's family. We predict that nurses will be asked to take on this responsibility. This means that the role of nursing care will expand beyond caring for patients. Nurses will be asked to address some of the most fundamental questions of the family, those which revolve around death.

There have been suggestions that hospitals provide a "patient advocate" who argues solely for the patient. Many believe that it is impossible for the family to give truly informed consent for an organ donation without such an advocate to protect them, particularly during this time of mind numbing grief. Equally important, an ombudsman protects the hospital from possible malpractice action. He may help relieve some of the burden that rests so heavily upon the family's shoulders at the time of death. The advocate will help to clarify issues for the family by helping to identify accurately problems that might cause them to hesitate before giving approval for timely organ removal. An ombudsman will make the family feel as if they are not being rushed into a situation they do not fully understand, and because the family is more secure in the situation, consent for organ donations may increase in frequency.

As physicians become involved in the network of organ harvesting, with operations taking place miles away, the role as healer will change. There will be great pressure upon physicians to provide needed living organs from the bodies of deceased patients. Yet as professionals we must learn to do so without violating the rights of the patient nor of the family in our efforts to help another human being many miles away.

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SPECIAL ARTICLE

Determination of "Code Status" in North Carolina: Still A Delicate Process

Edward V. Spudis, M.D., William A. Lambeth, Jr., M.D., and Patricia Simmons

EVEN though North Carolina laws recognizing the citizen's desire for a peaceful and natural death have been in effect since 1977 and have been considered a worthy example of such legislation, many clinical questions of application have arisen in Forsyth Memorial Hospital.[1, 2] Because of long-established medical traditions and cultural lore relating to death, many physicians continue to make arbitrary life-death decisions without looking for or expecting legal guidance or consequence.

Now that the dying process may be extremely, and unavoidably, prolonged even in comatose patients, many decisions concerning resuscitation, which were formerly quite simple and ritualistic, now involve significant risks.[3] Although these North Carolina statutes have not yet been involved in court decisions, similar laws are being tested in highly publicized cases in California and elsewhere.

The working guidelines that follow in the right-hand column are designed to clarify the legal language in the left column. This may be a useful format for posting in specialty nursing stations, intensive care units, etc. The wording of the law, 90-320-323, as amended in 1981 and 1983, is reproduced exactly except that the proposed form for the "Declaration of a Desire for a Natural Death" is not included. That form should be available in the hospital nursing or administrative offices. (To avoid much inconvenience, the Declarant should know in advance that the two necessary witnesses to the declaration must not be related to the Declarant or to the Declarant's spouse, must not have any expectation of sharing in the Declarant's estate, must not be the attending physician, nor an employee of a health facility where the Declarant resides, nor of the hospital where the Declarant may be a patient. It must also be notarized, or signed in the presence of the Clerk of the Court.)

From 674 Forsyth Medical Park, Winston-Salem 27103 (Dr. Spudis), and Forsyth Memorial Hospital, Winston-Salem 27103 (Dr. Lambeth and Ms. Simmons.

N. C. GENERAL STATUTES
ARTICLE 23, CHAPTER 90

RIGHT TO NATURAL DEATH: BRAIN DEATH

90-*320* General Purpose of Article:

(a) The General Assembly recognizes as a matter of public policy that an individual's rights include the right to a peaceful and natural death and that a patient or his representative has the fundamental right to control the decisions relating to the rendering of his own medical care, including the decision to have extraordinary means withheld or withdrawn in instances of a terminal condition. This Article is to establish an optional and non-exclusive procedure by which a patient or his representative may exercise these rights.

(b) Nothing in this Article shall be construed to authorize any affirmative or deliberate act or omission to end life other than to permit the natural process of dying. Nothing in this Article shall impair or supercede any legal right or legal responsibility which any person may have to effect the withholding or withdrawal of life-sustaining procedures in any lawful manner. In such respect, the provisions of this Article are cumulative. (1977, c. 815; 1979, c. 715, s.1.)

*FORSYTH MEMORIAL HOSPITAL SUGGESTED GUIDELINES**

90-320

This Act describes procedures which might offer legal protection to physicians who withhold or discontinue extraordinary care. No physician should arbitrarily define the hospital-wide emergency system — the traditional Code Blue procedure — as too heroic or extraordinary.

90-*321*

(a) As used in this Article, the term:

(1) "Declarant" means a person who has signed a declaration in accordance with subsection (c);

(2) "Extraordinary means" is defined as any medical procedure of intervention which in the judgment of the attending physician would serve only to postpone artificially the moment of death by sustaining, restoring, or supplanting a vital function.

(3) "Physician" means any person licensed to practice medicine under Article 1 of Chapter 90 of the Laws of the State of North Carolina.

(b) If a person has declared, in accordance with subsection (c) below, a desire that his life not be prolonged by extraordinary means; and the declaration has not been revoked in accordance with subsection (e); and

(1) It is determined by the attending physician that the declarant's present condition is
a. Terminal; and
b. Incurable; and

(2) There is confirmation of the declarant's present condition as set out above in subdivision (b) (1) by a physician other than the attending physician: then extraordinary means may be withheld or discontinued upon the direction and under the supervision of the attending physician.

(c) The attending physician may rely upon a signed, witnessed, dated, and proved declaration. (Note: A copy of a satisfactory form is attached to the original law.)

90-321 *The So-Named "Living Will"*[4]

Even when the patient has a properly prepared declaration, he must still be terminal *and* incurable, *and the attending physician must have written confirmation by another physician before a DO NOT RESUSCITATE (DNR or No Code Blue) order may be written.*

Terminal is a vague term which probably means "within weeks or months," not years. A Declarant should continue to receive ordinary care. This would often include antibiotics, blood products, respiratory therapy, simple surgical operations, etc. Intravenous fluids should be given at a rate that would ordinarily sustain life for a few weeks.[5]

If the patient is conscious, terminal *and* incurable, *he may reject all therapy. (Often such patients could be discharged from the hospital.)*

If the attending physician does not agree to withdraw or withhold treatment, then he should notify the Director of the Division or the Chief of the Section and also offer to resign from the case, e.g., Karen Quinlan. The hospital attorney should be called.

The family may not *revoke a declaration made by the patient; the patient may revoke a declaration by communication in any fashion.*

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* *(These guidelines have evolved at Forsyth Memorial Hospital; however Forsyth Memorial Hospital, Inc., is not responsible for problems concerning their application in any other institution, nor is the* North Carolina Medical Journal.)

90-322 Procedures for Natural Death in the Absence of a Declaration

(a) If a person is comatose, and there is no reasonable possibility that he will return to a cognitive sapient state, or is mentally incapacitated, and:

(1) It is determined by the attending physician that the person's present condition is:
a. Terminal; and
b. Incurable; and
c. Irreversible; and

(2) There is confirmation of the person's present condition as set out above in this subsection, in writing by a physician other than the attending physician; and

(3) A vital function of the person could be restored by extraordinary means or a vital function of the person is being sustained by extraordinary means; then the extraordinary means may be withheld or discontinued in accordance with subsection (b).

(b) If a person's condition has been determined to meet the conditions set forth in subsection (a) and no instrument has been executed as provided in G.S. 90-321, the extraordinary means to prolong life may be withheld and under the supervision of the attending physician with the concurrence (i) of the person's spouse, or (ii) of a guardian of the person, or (iii) of a majority of the relatives of the first degree, in that order. If none of the above is available, then at the discretion of the attending physician the extraordinary means may be withheld or discontinued upon the direction and under the supervision of the attending physician.

90-322 No Living Will *(the usual situation)*

When there is no valid declaration, a DNR order should be carefully supported by documentation in the record. The patient must be comatose, terminal, incurable, and irreversible, and offer no reasonable possibility of recovery of intellect. Comatose was probably an early substitute for "in coma," but neither use recognizes the popular concept of gradations of coma standardized in the Glasgow or Apgar scales.[6, 7] *The intent may have been to allow some residual signs of brain activity as long as other criteria were satisfied. Otherwise the lawmakers would have used the phrase, "total cessation of brain function," as is found in the brain death section. Aphasia does not satisfy the comatose requirement. Incurable may have been added to insure that terminal meant hopeless in the presence of the most effective therapy. (Irreversible, may be redundant. The legislators omitted it from the proposed form of the declaration.)*

"Cognitive" is synonymous with thinking. Slight cognition and meager reflex activity might be permissible within the intent of the law if the family and the two physicians agree in other respects. "Sapient" may have been inserted to suggest that the patient's thoughts needed to be more than animal-like reflexes. Terminal and incurable seem to be the critical words.

The 1983 revision, 90-320, paragraph (a), clearly states that these are "optional and non-exclusive procedures" to insure an individual's rights. In special cases, therefore, with appropriate family and patient permission, more flexible or broader definitions of comatose might be allowed. It is unlikely that this could be stretched to apply to ambulatory cancer patients with a life expectancy of years or elderly patients who are frail but not comatose. Even severely retarded, mentally incapacitated adults and infants must be terminal and incurable. Psychotic patients who were once cognitive and sapient do not qualify as mentally retarded. (A vital function could be restored by artificial ventilation in every patient we would have under consideration, so that this section seems superfluous.)

Confirmation by one other physician does not imply an extensive hospital staff survey searching for any single physician who would agree with the attending. If two or three associates fail to agree that extraordinary means should be withheld, then the attending should explain this to the family and delay a DNR order.

The resuscitation team always adjusts the intensity of its efforts by evaluating the patient's chart. There are no standard subcategories of DNR, such as chemical code, nurse's code, partial code, or slow code. If there is a respiratory or cardiac arrest, the nurses must announce the pre-determined phrase that activates the customary emergency team. The law does not mention medication routes or rates, cardioversion, or intubation. The most experienced nurse or physician on the scene should assume direction and make appropriate changes in the orders initiated by the earliest responders. If the patient is already on a respirator, and there is a cardiac arrest, the nurse may call for the emergency team to obtain physician help quickly. (Even if DNR has been written and co-signed by a second physician, the nurse may call for the hospital-wide *team in an unusual event such as choking or hanging or if there is dramatic improvement in the patient.) DNR orders should be updated when a patient improves.*

DNR, whether written for patients who have a Living Will or not, allows withholding or discontinuation of extraordinary care but not *ordinary nutrition, antibiotics or nursing care. Certain procedures, for example renal dialysis, may be ordinary or extraordinary. The key thought is that death may not be hastened by the lack of ordinary care.*

The DNR order should only be written after the second physician has concurred. If there is an emergency before a second physician has confirmed the attending's opinion, in Forsyth Memorial Hospital, the charge nurse honors the incomplete DNR order.

90-*323* Death: Determination by Physician

The determination that a person is dead shall be made by a physician licensed to practice medicine applying ordinary and accepted standards of medical practice. Brain death, defined as irreversible cessation of total brain function, may be used as a sole basis for the determination that a person has died, particularly when brain death occurs in the presence of artificially maintained respiratory and circulatory functions. This specific recognition of brain death as a criterion of death of the person shall not preclude the use of other medically recognized criteria for determining whether and when a person has died.

90-323 Brain Death

Brain death may be used as a sole basis for the determination of death and hence for the termination of all care and the donation of vital organs. Note that the attending physician may legally make this ultimate determination without any consultation.

The attending may use whichever technical aids locally available that are ". . . ordinary and accepted standards," such as electrical or isotope imaging devices, but he is free to use clinical judgment alone. There were more than thirty published criteria for brain death as of 1978.[8] *Technical aids may contradict each other and contradict the clinical judgment. They are difficult to ignore once they are recorded, especially after they have been explained to the family.*[9]

Cessation of "total brain function" means loss of all hemisphere and *brain stem function; i.e., fixed pupils and absent corneal, doll's eye, gag, and caloric responses, plus some documentation of apnea in the presence of adequate* CO_2*. Spinal reflexes and muscle fasciculations may persist.*[10] *There should be no suspicion that this cessation is reversible. The effects of drug overdose, poisons, and hypothermia should be considered. There should be no mystery. The diagnosis of a disorder that can typically lead to brain death should be firmly established. There should be a reasonable period of observation, e.g., two days, before diagnosing brain death. Severe head trauma may be an exception.*

Pregnancy may be a contradiction to discontinuation of life support systems.

Because neither electrical, chemical, nor imaging studies of brain function are infallible, and because national standards change rapidly, a written consultation from at least one other staff physician is recommended in Forsyth Memorial Hospital before declaring brain death. (That co-signer should not be a member of an organ-harvesting team.) There should be documentation in the record to substantiate compliance with the brain death criteria used.

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SPECIAL ARTICLE

The Case for Otolaryngic Allergy

John W. Foust, M.D.

THE specialty of otolaryngology is one that overlaps many of the other disciplines of specialization in medicine and surgery. This has caused a degree of conflict over the years with thoracic surgery, plastic surgery, medical pulmonary specialists and gastroenterologists to name a few, and more recently with the medical and pediatric allergists.

The modern day otolaryngologist spends a minimum of five years in postgraduate training. All accredited residency training programs in otolaryngology must contain a minimum period of training in a very broad range of subjects that involve the many structures of the head and neck. This training, of necessity, must consider adjacent structures as well as those that pass through the head and neck area. It also must consider many disease processes that are centered in other areas of the body but have an important effect on the otolaryngology region.

Like any other specialty training program, the otolaryngology residency training is the starting point in that specialty. For the individual who desires to further narrow his field of interest, the first five years is only a beginning to a number of areas of subspecialization, i.e., otology, otoneurology, rhinology, facial plastic and reconstructive surgery, head and neck cancer and oncology, endoscopy, pediatric otolaryngology, otolaryngic infectious diseases, industrial noise, and allergy to mention a few.

Subspecialization requires additional training and experience, the amount depending upon the amount of training received during these first five years and the amount of additional material that must be mastered to be competent in the desired subspecialty. This statement as it relates to otolaryngology is true of all other areas of medical practice and subspecialization.

Conflict arises when two or more areas of specialization overlap in their approach to an anatomical area or their approach to a disease process or their approach to a therapeutic modality. This has most recently been the case with allergy and otolaryngology.

Atopic allergy, which we now know to be IgE mediated, was first described in 1906 by Von Pirquet. Through the years since that time, much has been learned about this form of hypersensitivity. What was once an entire field of medicine is now only one aspect of the field of Immunology.

In patients with atopic disease due to inhalant antigens, the most frequent symptoms occur in the nose, the sinuses, the pharynx, the eyes, and the chest. For this reason the patient is most often seen by a physician who specializes in diseases involving the site of these symptoms — the otolaryngologist. More importantly, the primary care physician frequently refers the patient to the otolaryngologist because of the symptoms. Regardless of how the patient gets to him, because of his knowledge of the area and its diseases and his ability to adequately examine the region, the otolaryngologist is the one who sees a large percentage of this type of patient and makes the diagnosis. Because of this fact the American Academy of Otolaryngology — Head and Neck Surgery, Inc., adopted the following policy statement, approved by its Board of Directors on October 20, 1982:

> "Allergy
> The American Academy of Otolaryngology — Head and Neck Surgery, Inc. maintains that many allergic disorders manifest themselves in the region of the head and neck, and therefore, that the management of these allergic disorders is an integral part of the specialty of otolaryngology — head and neck surgery."

In the 1930's and 1940's, Dr. French Hansel began to study the testing methods of allergy at that time, i.e., scratch and prick techniques. It was his opinion that these, while serving their intended purpose, were not quantitative and could not be standardized.

Rinkel subsequently worked out the serial dilution titration (skin endpoint titration) method of testing which he published in 1949. This intradermal technique accomplished three important things: 1.) It diagnosed disease. 2.) It identified the offending antigens. 3.) It identified the safe starting dose of antigen therapy, and in many cases the symptom relieving dose.

This approach to the diagnosis and treatment of atopic allergic disease has been very successful, otherwise it would not have stood the test of time nor would so many patients refer their fellow sufferers to the otolaryngologist who is qualified to diagnose and treat this type of disease.

An important discussion on the validity of skin endpoint titration was held before the Health Care Delivery Committee of the Council of Medical Specialties Society on July 29, 1981. At this meeting were representatives of the Medical College of Physicians, the American Academy of Allergy, the American Academy of Pediatrics and the American Academy of Otolaryngology. The following statement pertaining to skin endpoint titration was issued at the conclusion of this meeting:

> "Skin endpoint titration has been shown to be effective in quantifying patient sensitivity and for providing a

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From 3535 Randolph Road, Charlotte 28211.

> rough guide of starting dose of immunotherapy. It has not been shown to be an effective guide for determining the final therapeutic dose.”

In the December 1982 *Archives of Otolaryngology*, an article by Lee, Kniker and Campos entitled “Aggressive Coseasonal Immunotherapy in Mountain Cedar Pollen Allergy” in a well controlled study using mountain cedar pollen allergy demonstrated that skin endpoint titration when used as a diagnostic tool and as an indication of a safe starting dose for immunotherapy, indeed, does do what is claimed for it. These authors are from the Department of Pediatrics, Division of Clinical Allergy, University of Texas Health Science Center at San Antonio.

The diagnosis and treatment of food hypersensitivity has also been one of the controversial issues between the two groups of allergists in recent years. Historically, the otolaryngic allergist realized long before the medical allergist that the normal skin testing for foods was unsatisfactory. We now know, of course, that this is because most food problems are hypersensitivities or intolerances and are not IgE mediated as are the inhalant allergies. We also know that the skin test is an IgE reaction and will not reliably diagnose non-IgE mediated allergies. It was Rinkel who first conceived the concept of clinical food hypersensitivities and out of this concept developed the provocative testing and the challenge ingestion testing method of diagnosing food hypersensitivities, methods that were well accepted and utilized by the otolaryngic allergists while the general allergists were still “making food diagnoses” with prick and scratch tests.

Since the mechanism of non-IgE mediated food hypersensitivities is still unknown, the experimental proof of these testing methods yet remains to be demonstrated. For this reason, those who use these methods are subject to criticism by their competitors. In this era of pure science, if it is not proven by double blind studies it is not valid even when experience by qualified clinicians has repeatedly demonstrated that properly done tests do diagnose hypersensitive food reactions in patients.

Cytotoxic testing developed by the Bryan's in St. Louis is an *in vitro* method of testing for allergy using cytolysis of the white cells of peripheral blood of allergic individuals when exposed to antigens to which they are allergic. This test was widely used for a period of time but because it is not easy to reproduce it remains an area of controversy. When done by properly trained and qualified individuals it is a means of screening for food sensitivities in allergic persons.

The otolaryngic allergist has been accused of using other methods of diagnosis and treatment which are unorthodox and unacceptable and have never been endorsed, or as far as I know, even considered by the American Academy of Otolaryngic Allergy, i.e. auto injection of urine.

In the last few years Paper-Radio-Immuno-Sorbent Test (PRIST) and Radio-Allergo-Sorbent Test (RAST), which are *in vitro* radioactive methods of testing and measuring specific IgE levels of human blood, have been perfected. Total IgE is measured with PRIST and specific IgE antibodies with RAST.

Doctors Donald Nalebuff and Richard Fadal designed a modification of the RAST such that it would be used as an equivalent to the skin endpoint titration method of testing and indicate the concentration of antigen with which to begin immunotherapy. These techniques, properly done by qualified persons in accepted situations, are a proven method of diagnosis. Unfortunately, these techniques have been merchandised by private enterprise and as a result have been improperly utilized in some instances by individuals without proper training, knowledge and skill.

The discussion or debate before the Health Care Delivery Committee of the Council of Medical Specialities Society on July 29, 1981, also issued the following statement regarding RAST:

> “RAST is an *in vitro* test for measurement of specific IgE antibody related to patient sensitivity and may be a useful adjunct in estimating the initial dose of immunotherapeutic extract. RAST has not been shown to be an effective guide for determining the final therapeutic dose.”

The American Academy of Otolaryngic Allergy has published position statements for several years and in these have stated where it stands in relation to accepted methods of diagnosis and treatment. The 1983 statement is as follows:

I. Endorsed diagnostic and treatment technique for IgE mediated inhalant allergies
    A. Endorsed Skin Test Modality:
        1. Skin Endpoint Titration (SET) is endorsed by the AAOA for the following reasons
            a. standardization;
            b. provides useful guide for a safe and generally more potent starting dose for immunotherapy, allowing increased cost efficiency;
            c. provides generally superior clinical results by:
                1) better identifying false test responses,
                2) allowing individualized variance of allergen potency in a multi-allergen treatment mixture, and
                3) allowing safe co-seasonal testing and treatment.
    B. Endorsed *in vitro* marking tests:
        1. Paper-Radio-Immuno-Sorbent Test (PRIST) — an *in vitro* test for the measurement of total IgE in blood sera. It affords a valuable adjunct:
            a. as a general guide for the presence of IgE mediated allergic disease;
            b. for prognosticating in infants the likelihood of future atopic problems;
            c. for evaluating equivocal RAST positive responses.
        2. Radio-Allergo-Sorbent Test (RAST) (modified) — an *in vitro* test for the measurement of specific IgE antibody. This testing modality:
            a. provides all the virtues of SET;
            b. may allow a more potent safe starting

dose for immunotherapy than does the skin whealing response, allowing achievement of an optimal treatment dose more rapidly and more cost effectively;

c. prevents unwarranted treatment with allergens producing false positive skin responses.

RAST should be ordered only after a thorough evaluation of the patient. Full battery testing (30 or less allergens) should be accomplished only after verification of the need by positive inhalant "screening" RAST (maximum of 10 allergens) or skin whealing responses. When a skin test procedure is used as a screening device, no payment for this technique should be allowed for those allergens surveyed by RAST.

Justification for repeat of the RAST include:

1) absence of immunotherapy for a prolonged period of time;

2) patients, who for unexplained reasons, cease to gain benefit from their previously successful immunotherapy regimen.

C. Endorsed treatment modality:

The AAOA advocates immunotherapy only for IgE mediated inhalant disorders unmanageable by the process of removing proven offending allergens from the environment. Successful immunotherapy depends upon individualization of allergen dosage, in contrast to administration of the same predetermined dosage to all patients. A predetermined progressive increase in the dosage of antigens selected for therapy should continue until either a symptom-relieving dose or a maximally tolerated dose is achieved.

II. Endorsed diagnostic and treatment techniques for hypersensitivity to foods

Diagnostic tests for food hypersensitivity may be equivocal, necessitating a second test modality for confirmation. A third modality is endorsed only with justification.

A. Endorsed Test Modalities:

1. Procedures entailing manipulation of the patient's diet:
   a. elimination diets
   b. deliberate challenge food test (preferred).
2. Intracutaneous provocative food test (IPFT) — this *in vitro* test combines objective intracutaneous titration of a specific food antigen with objective/subjective provocation and a relief of signs and symptoms. The subcutaneous variation of the technique presents similar qualities (maximum of 30 without justification).
3. Radio-allergo-sorbent test (RAST) — the majority of food hypersensitivities are not IgE mediated. RAST for foods should not be performed routinely.

B. Endorsed treatment modalities:

1. Treatment by diet:
   a. elimination diets
   b. rotary diversified diets
2. Therapy by injection of specific food antigens. Clinically this modality has proven of significant benefit. While a compromise with strict diet control, it may provide an increase in patient cooperation through greater dietary freedom. Avoidance of nutritional compromise proves beneficial to patients with multiple food hypersensitivities.

Of interest and for comparison the position statement of the American Academy of Allergy and Immunology relative to skin testing and radio-allergo-sorbent testing is as follows:

1. Optimally performed skin tests and RASTs both detect IgE antibody accurately and reproducibly.
2. Within the constraints of each method, both skin tests and RAST yield information of a semi-quantitative nature, but RAST is less sensitive than skin tests.
3. Results of both tests usually correlate equally well with allergic symptoms and signs produced by exposure to the specific allergen tested.
4. Both tests can be used as grounds for instituting immunotherapy in an efficient and economic manner. Where RAST is used as grounds for immunotherapy, a skin test with the planned initial dilution of immunotherapy solution should be done before starting immunotherapy to prove that the patient tolerates *in vivo* administration of the allergenic extract.
5. Skin tests appear to be superior to currently available RASTs in the diagnosis of certain life-threatening anaphylactic states where maximum sensitivity is important, particularly in the diagnosis of penicillin and hymenoptera allergy.
6. The results of skin tests are immediately available. Where both tests can be initiated at the time of the patient's visit, the results of skin tests are available in about 45 minutes; those of RAST are available in 2 to 3 days.
7. RAST is preferable to skin testing in certain conditions where skin testing is unsatisfactory, particularly where there is dermatolographia or widespread skin diseases.

It is satisfying to note the growing similarity of the position statements of the American Academy of Allergy and Immunology and the American Academy of Otolaryngic Allergy. Indeed, if the term "skin test" is interpreted to include skin endpoint titration, as well it should, and if the greater specificity of the RAST were noted along with its lesser sensitivity, the statements would be very compatible as regards these IgE allergy testing modalities.

The American Society of Ophthalmology and Otolaryngology Allergy was formed in 1940. At that time ophthalmology and otolaryngology was a dual specialty and had a joint academy. Following separation of the two specialties into separate academies and recognizing that the otolaryngologist was the one who saw most of the allergy patients, the allergy society renamed itself the American Academy of Otolaryngic Allergy in 1980 to better identify its membership. Fellowship in the American Academy of Otolaryngic Allergy requires that:

1) one be Board certified in otolaryngology; 2) have a real interest in allergy as a subspecialty; 3) successfully complete two basic courses in therapy and technique approved by the AAOA over a two-year period of time; 4) attend three annual scientific meetings of the AAOA over a four year period; 5) be an associate member for a minimum of one year, and; 6) successfully complete an examination given annually to qualified candidates. The examination is in two parts. One is an extensive written exam on basic immunology, allergic diseases, and testing and treatment theory and techniques. Part two is an oral exam conducted by at least two separate examiners based on complete case histories the candidates submit on four of their patients. The real purpose of part two is to review the candidate's clinical application of his allergic skills. Over the past several years the pass rate has been approximately 80%. The requirements for Fellowship in the American Academy of Otolaryngic Allergy are such that those who attain Fellowship status are truly qualified to practice the subspecialty of allergy.

The American Academy of Otolaryngic Allergy asked to be included in the Conjoint Board of Allergy and Immunology in 1972 when it was formed but was denied. Surrounding this controversy of status, both before and since, has arisen an effort by the general allergists apparently to discredit the otolaryngic allergist. The recent Blue Shield Committee of the North Carolina Medical Society recommendation regarding Blue Shield reimbursement is a result of such activity. In this era of cost effectiveness this type of approach has been used repeatedly by the general allergist in this country to gain denial of payment for legitimate professional services. This same type of controversy in another area led to Report C of the Council of Medical Service of the American Medical Association at the June 1983 meeting of the American Medical Association which was approved by the House of Delegates. This report stated that neurologists who were properly trained could indeed do CAT scans and should be paid for these services. This report also reaffirmed Report W of the Board of Trustees of the American Medical Association in 1976 which was approved by the House of Delegates. Report W stated the following:

1. The American Board of Allergy and Immunology, a Conjoint Board of the American Board of Internal Medicine and the American Board of Pediatrics, continue to use the complete name of the Board at all times;
2. Discussions between the Conjoint Board and the American Board of Otolaryngology, which have been initiated, be encouraged to continue in an effort to develop a mechanism for appropriate recognition in the field of allergy for diplomates of the American Board of Otolaryngology;
3. The AMA reaffirm strongly and publicize widely to state, and county societies, to specialty societies, to specialty boards, to government agencies, to medical foundations and to third party payers the principles contained in this report relating to the rights of physicians to practice in special fields of medicine and to be compensated for their services;
4. The Council on Medical Service be asked to investigate the problems which certain physicians have encountered in requesting compensation for services provided in the care of allergic patients, and to make recommendations concerning those problems; and
5. The Council on Medical Education be requested to consider, with the Conjoint Board and the American Board of Otolaryngology, the possibility of strengthening education in allergy in otolaryngology residencies.

The Blue Shield Committee of the North Carolina Medical Society has apparently "rubber stamped" the recommendations of the American Academy of Allergy. In this day of rapidly escalating health care costs, it is unfortunate that so many persons suffer with allergic diseases and to properly diagnose and properly treat these individuals an adequate evaluation is required, all adding to our health care costs.

None of us at this time have any control over the office practice of a properly licensed physician. There is no real means of controlling who uses a given diagnostic or therapeutic modality. This is unfortunate.

Denying reimbursement to *all* who use a given modality that is appropriate, is akin to "throwing the baby out with the bath water."

I Resolve . . .

Resolutions to be considered and voted upon by the North Carolina Medical Society House of Delegates at the annual meeting in Pinehurst in May 1984 will be published in the March issue of the *North Carolina Medical Journal* if they are received at Society Headquarters by January 15, 1984.

SPECIAL ARTICLE

Duke Class of 1983 and the Hippocratic Oath

Arthur C. Christakos, M.D.

ONE hundred and twenty-two individuals of the class of 1983 will have received the degree of Doctor of Medicine during the three official dates that degrees are conferred upon candidates from the Duke University School of Medicine. This includes those graduates who received their degrees in early September, in late December, and those who are to receive their degrees on May 8, 1983. There are 88 males in this class and 34 females. Unlike classes in the past, only about one-third of the students are married, compared with two-thirds in graduating classes in the past. The class of 1983 is represented by 29 states and four foreign countries. Ninety-six of the class received baccalaureate degrees in natural sciences. Eleven received their undergraduate degrees in social sciences and nine in the humanities. Six of these students received combined degrees. This is a very productive class, having had 113 publications in peer review journals and, at the time of the compilation of these figures, 63 additional papers were in preparation. As usual, the largest proportion of the class has chosen internal medicine for their careers. This is followed by surgery, radiology, and pathology. Ophthalmology, pediatrics, and obstetrics-gynecology round out the top five with psychiatry, family medicine/orthopaedics, and anesthesiology following thereafter. Not all was work: music, gardening, quilting, running, swimming, reading, sailing, Chinese, Japanese, writing poetry, etc. This has been an enjoyable class and I am honored to administer the Hippocratic Oath to them.

It is appropriate on occasions such as this to reflect on the significance of symbols and rituals as they relate to our profession.

Meyer Freidman and Ray Rosenman in their book, *Type A Behavior and Your Heart*, make the observation that one of the characteristics of modern times is the rapid disappearance of myth, ritual and tradition from most of our lives. It appears that this is the first time in the experience of man on earth that so large a group of individuals — especially in Western society — is attempting to live in so absolute a spiritual void. For this reason, I am pleased to see so many of you taking time to participate in this traditional ceremony and to take the Hippocratic Oath. I hope it will have special meaning for each of you. Furthermore, I hope this ceremony will continue to have deep meaning for each of us for years to come. In its present format, Dr. Anlyan instituted this tradition for our graduating seniors in the early to mid-1960s.

The professional procession is led by a doctor carrying the staff of Aesculapius. Dr. Ewald Busse, the Dean and Vice Provost Emeritus, has included in the program a brief historical account of the symbolism of the Staff of Aesculapius. A well-known legend recounts that Aesculapius was attending a patient stricken by a thunderbolt when a serpent crept into the room. Aesculapius killed the serpent but a second appeared on the scene, put herbs in the mouth of the first serpent and revived it. Aesculapius used the same herb to restore his patient.

The staff itself may very well have no additional significance over the snake since symbolically the staff and snake have been interchangeable since antiquity. One is reminded of the story of Moses demanding the release of the Hebrews from Pharoah when his brother Aaron threw down his staff before the Egyptian ruler, whereupon it turned into a snake.

Aesculapius was the son of Apollo and Koroni. During his gestation his mother was mortally wounded. Unable to resuscitate his wife, Apollo decided to save the unborn Aesculapius (presumably by postmortem Caesarean section). He placed his son in the care of the wise Centaur named Cheiron who taught Aesculapius the art of medicine. The name Cheiron is of interest in that the Greek word *cheiri* means hand and is the basis for the word *chirurgy*, later changed to *surgery*.

Aesculapius and his wife Epione (or Xanthe) had a number of children. Three are remembered in Medicine because of their names: Hygeia, from which we get the word hygiene; Iaso, from which we get the Greek word for doctor, iatros; and Panakei, from which we get the word panacea or cure-all.

Early in the third century B.C., the Roman Empire suffered epidemics of plague about which they consulted the Oracle at Delphi. They were advised to import Aesculapian physicians to help them. During a visit to the Temple of Aesculapius at Epidauros, the Roman envoys dreamed of Aesculapius who spoke to them saying: "Fear not; I shall yield up my domain and my images, but take good heed of this snake coiled about my staff, mark it well that you may know me by it. . . ."

Perhaps the lily-of-the-valley (Convallaria majalis) was not as readily noticed as the staff. These delicate blossoms have traditionally been the physician's flower. Apollo allegedly discovered this plant and gave it to his son Aesculapius. From ancient times it has been valued as a cardiac tonic and as a diuretic. In western Europe, this beautiful plant has been used traditionally as a symbol of mourning, incorporated in funeral wreaths. Many portraits from the 16th century show physicians holding these blossoms. Were they mourning their dead patients or preparing a life-giving tonic?

Dr. Christakos made these remarks to the Class of 1983 of Duke University Medical School on May 7, 1983.

The oath of Hippocrates was probably not written before 200 A.D., almost six centuries after the death of the father of medicine. It has survived to the present, fending off the attacks of charlatans who prevailed during the intellectual stupor of the Middle Ages. The greatest significance of this oath lies in the ethical standard or the moral code it establishes — a code of ethics no reputable physician will transgress. Even though specific references in the original rendition of the oath are no longer applicable today, the basic spiritual meanings have been retained.

The original oath referred to the deities Apollo, Hygeia and Panakei, the father and children of Aesculapius, respectively. Today we make our vows to "whatever we hold sacred."

In ancient times the student was taught free of charge in return for reverent respect of the teacher and of other members of the profession. Times have changed very little: today the student receives instruction for a nominal fee and in turn he manifests his affection for his mentors at the annual student-faculty show.

In spirit, the concept of respecting the patient and doing him no harm while practicing the art of medicine is retained. The admonition that one recognize his limitations is found in both the ancient and modern versions. Confidentiality is viewed as important as all other features of this code of professional ethics.

Little is known of the man whose name is associated with this oath. It is stated that he was born on the Island of Kos in 460 B.C. and that he died 90 to 104 years later at Larisa in Thessaly. His father Heraclites was also a physician and was considered a direct descendant of Aesculapius. The teachings of Hippocrates, permeated with intellectual, honest and high ideals, stressed careful and sharp observation with the clear, detailed and honest recordings of case histories.

Several years ago, a survey of 132 North American medical schools revealed that 70 schools used some form of the Hippocratic Oath, 9 used various other oaths and 13 used no oaths of any kind. Those of you accustomed to surveys have already calculated that 40 schools did not answer the survey. In spite of this, it is gratifying that some sort of ritualistic ceremony is observed periodically by each of us over the years, if for no other reason but to take an hour off to reflect on our medical heritage.

At the annual Hippocratic Oath Ceremony I am reminded of Robert Louis Stevenson's "Eulogy of the Doctor." I would like to share that with you at this point.

> There are men and classes of men that stand above the common herd — the soldier, the shepherd not infrequently, the artist rarely, rarer still the clergyman, the physician almost as a rule — he is the flower of our civilization and when that stage of man is done with, only to be marveled at in history he will be thought to have shared but little in the defects of the period and to have most notably exhibited the virtues of the race. Generosity he has, such as is possible only to those who practice an art and never to those who drive a trade — discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important, Herculean cheerfulness and courage. So it is that, he brings air and cheer into the sick room and often enough, though not so often as he desires, brings healing.

Many philosophers expounding on the meaning of life have touched upon many of the aspects of the Oath of Hippocrates and Stevenson's "Eulogy of the Doctor." George Eliot put it rather succinctly when she said "What do we live for, if it is not to make life less difficult for each other?" Ralph Waldo Emerson emphasized the urgency of our life's mission: "I expect to pass through this world but once. Any good therefore that I can do or any kindness that I can show for any fellow creature, let me do it now. Let me not defer or neglect it, for I shall not pass this way again."

Other philosophers such as Leo Rosten remind us that "The purpose of life is not to be happy — but to matter, to be productive, to be useful, to have it make a difference that you lived at all." I am not sure I agree wholeheartedly with Rosten's philosophy. I certainly am happy in what I do and I think most physicians are happy. Indeed, that is just an added blessing to our profession.

Before administering the Oath of Hippocrates I should like to leave you with two final thoughts. Keep in mind Mark Twain's admonition: "Always do right. This will gratify some people and astonish the rest." If you cannot do right, at least be good, for Hippocrates said "Some patients, though conscious that their condition is perilous, recover their health simply through their contentment with the goodness of the physician."

Again, a sincere welcome to all of you for the annual ritual of the Hippocratic Oath Ceremony. I hope those of you who are taking this oath today will repeat it periodically as a reminder of the ethical code which guides all of us in our profession of medicine.

Features for Patients

How Parents and Professionals Can Help the Stuttering Child

Richard E. Shine, Ed.D.

What Is Stuttering?

The best way to understand stuttering is to first know what it is not. Stuttering is not a learned behavior, a nervous condition, a psychological problem, an emotional problem, nor is it a problem caused by parental pressures and environmental stress. Stuttering is not caused by the reaction of parents to a child's nonstuttering disfluencies such as pauses or hesitations within a sentence or before beginning to talk; interjections such as "uh," "um," "like uh," "you know," etc.; revisions of words like, "I rode the hor— pony"; phrase repetitions, "we had a . . . pause . . . We had a good time"; or incomplete phrases, "Yesterday we took the . . . pause . . . Yesterday we went to the fair."

There has never been any research or clinical evidence to support the historical belief that stuttering is a problem caused by psychoses, neuroses, or nervousness, but there are children who exhibit these problems and who also stutter. These other problems do not cause the stuttering but they can complicate the steps to alleviate the stuttering.

There has never been one shred of evidence to support the assumption and long-accepted theory that parents cause stuttering by pressuring the child to talk correctly, by labelling stuttering (erroneously referred to by experts as "normal nonfluency"), or by reacting to a child's way of speaking before he becomes fluent in the language. In fact, the literature reveals that directing the child to change the way he talks (slow down, take it easy, stop and try again) helps him overcome the stuttering.

Stuttering is the whole-word repetition (I-I-I, he-he-he), part-word repetition (pu-pu-part, wu-wu-went), prolongation (SSSSSSunday, wwwwwwwe), and struggle behavior (any stuttering that is primarily characterized by tension, i.e., increased loudness and/or pitch of the voice, facial grimaces, head jerking, associated body gestures, etc.) exhibited by an individual when talking. The order in which the four types of stuttering are listed above represents a general hierarchy of severity from mild to severe and the frequency of each type helps determine the need for direct professional fluency training. For instance, if the primary type of stuttering is whole-word repetitions, generally the problem will be rated as mild and may be overcome by parental intervention. If the primary types include part-word repetitions and prolongations, the general severity rating will be moderate and the need for direct fluency training will depend to a great degree on the frequency of stuttering and the concerns of the parents and the child about the problem. If struggle behaviors are predominant, the problem will be rated as severe and immediate direct fluency training will almost always be recommended.

Stuttering is a coordinative disorder involving the child's lack of ability to coordinate the muscles used in speaking; that is, the muscles of respiration (the speech breathing system), phonation (the larynx/voice box), and articulation (the tongue, lips, jaw, palate). The stuttering child's lack of coordination can be likened to that of the child who is clumsy in running, throwing or other motor activities except that the child who stutters is clumsy in controlling the muscles of the speaking mechanism.

It's not surprising that the child with coordination problems of the speaking mechanism cannot maintain conversational rates of speaking without a breakdown (stuttering) if we realize that during conversation we produce approximately 170 words per minute, with each word containing on average of about 3 or 4 sounds, or 10 sounds per second. To help understand rate-of-speaking, time yourself for 30 seconds while saying out loud "one thousand one," a phrase containing 11 sounds that is typically used to count seconds. If a child becomes excited and attempts to speak more rapidly as well as use the muscular system more vigorously, it is highly probable that the breakdowns (stuttering) will become more frequent.

Stuttering is a universal problem; that is, it exists in all cultures and all languages of the world, and no matter what language the child (age 2 to about 9 years) speaks — English,

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From the Department of Speech, Language and Auditory Pathology, East Carolina University, Greenville 27834.

Illustration by Ernest Craige, M.D.

Spanish, German, or Dutch — the following identical "types" of stuttering behaviors will be exhibited: whole-word repetitions, part-word repetitions, prolongations, and struggle behaviors. Of course the frequency of each type and the nature of the struggle behaviors will differ from child to child and from time to time.

Stuttering is a problem of childhood which is significantly greater in males than females (the ratio is approximately 3 to 1 with findings as high as 8 to 1). Almost all stuttering begins between the ages of 2 and 9 years with the majority beginning between 3 and 5 years of age. Some children do overcome their stuttering as a result of maturation, but most of the 40 to 50% reported to recover from childhood stuttering do so as a result of parents' and others' suggestions for the child to change the way he talks (slow down, take it easy, stop and try again . . .).

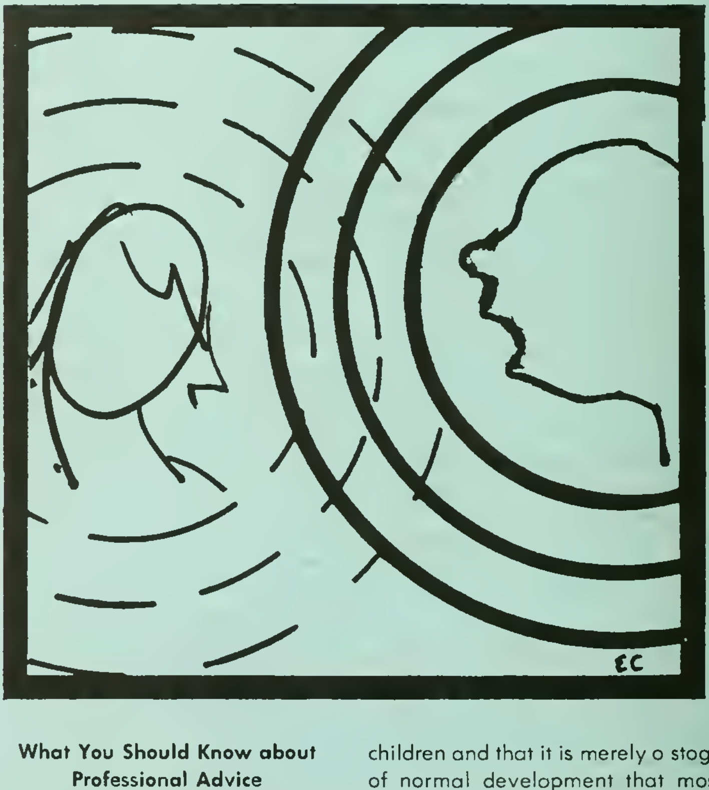
Parents Are Valid Judges of Stuttering

In my 16 years of experience in working with young children who stutter, I have found that parents rarely if ever misdiagnose stuttering and they validly estimate its rate and severity. If parents report that their child is stuttering and that it is severe enough to cause communication problems, we can be assured that they are correct and that careful consideration and appropriate advice needs to be provided. The professional is guessing when he dismisses the parents' concern by explaining that it is merely a stage the child is going through (data indicate he will be correct by chance about 40 to 50% of the time).

What To Do When Your Child Begins Stuttering

Do not read the sections on stuttering in current baby books or child development texts and do be extremely critical of articles in popular magazines, newspapers, and particularly tabloids. Critically evaluate anything written by speech clinicians prior to the 1980s and much of what is still being written.

Do have confidence in your own evaluation of whether your child has a stuttering problem and do not hesitate to seek assistance, but be aware that inappropriate or incorrect advice may be given by speech clinicians, psychologists, physicians, and other professionals who have not kept up with recent developments.



What You Should Know about Professional Advice

Traditionally, advice to parents has been both inappropriate and incorrect. Inappropriate advice includes suggestions that would be beneficial in raising any child (i.e., providing opportunities for enjoyable and rewarding speaking experiences; developing and maintaining the health of the child including diet, exercise, rest, and sleep; developing other interests, hobbies, and abilities, etc.) but are not specific to the needs of the stuttering child. Advice may involve an attempt to deceive the child by telling him, "It's all right because everybody has trouble talking and it'll be okay." If the child had a cut finger we wouldn't say, "It's all right, everybody cuts his finger and it'll be okay"; rather, we would help by bandaging the finger or seeking medical attention and giving advice to the child on how to avoid future cut fingers.

A source of incorrect advice has been the assumption that stuttering is to be expected or is common in young children and that it is merely a stage of normal development that most children go through. This is not true! It is estimated that less than 2% of all children ever stutter, but most children, including those who do stutter, do exhibit nonstuttering disfluencies. Stuttering disfluencies, being different from nonstuttering disfluencies, are easily identified by parents and other lay persons but, because of bias, are often misdiagnosed as normal developmental disfluencies by professionals. If it were merely a stage of normal development that children go through, there would not be an estimated 2 million Americans

Suggestions for the child to change the way he talks: "Slow down, take it easy, stop and try again"

who never overcame the "normal" stage and thus continue to stutter.

Other incorrect advice includes suggestions to refrain from doing anything that might cause the child to become aware of the problem and thus begin to fear or avoid talking. Again, my experience has been that children, even the 3-year old, know when they talk different from their peers. Unfortunately when the problem is not handled directly by the parents, the child may begin to think that the problem is so bad even the parents won't talk about it. The parents are mistakenly advised to listen quietly to what their child has to say and to wait patiently even if the child is struggling severely to say a word. The parents are told never to help the child by filling in words he is struggling to say even though experience reveals that saying the word for the child enables him to simply repeat the word or to continue with what was being said without repeating the word. We now know that we should not let the child continue to struggle but should eliminate the struggling by providing the word. Finally, it is incorrect to imply or to blatantly state that parents cause stuttering or that the environment causes the problem.

Examples of inappropriate/incorrect advice, regardless of the professional who offers the advice, include: "Don't worry about it, Mom, it's just a stage that most kids go through"; "It's just normal nonfluency and you really need to be careful not to call attention to it or to cause your child concern by reacting or by trying to help him correct the problem"; "Just ignore the stuttering and try to find out what things in the child's environment cause it, particularly what things you (Mom and/or Dad) are doing"; "It's an emotional or psychological problem because he has a lot of trouble only when he's excited."

Why Does My Child Stutter?

In the past (the early 1960s) we used to think that children stuttered primarily because someone, usually a mother, was putting pressure on the child to talk correctly or she was correcting or calling attention to the child's normal developmental nonstuttering disfluencies. Since then we have discovered that parents do not cause stuttering (parents cause children).

A child stutters because he/she is different: different like the child who has a reading problem or a math problem or the child who has to wear glasses. If your child had a reading or math problem or needed glasses, would you feel that you did something to cause the problem? No, the reason for the problem is that the child is different; that is, the child has a weakness which, however, could be a hereditary problem.

The reason your child stutters is because he has a coordination problem. In a way it is like the kid who is clumsy and cannot control or coordinate his muscles to run well or throw well — except that your child is clumsy in controlling the muscles used for talking. Our task is to teach the child to talk in a different way to compensate for the discoordination and to speak in a normally fluent manner. Once the child establishes fluency his speech will not be identifiably different from that of his peers and in later life he will probably not remember his stuttering.

What You Can Do to Help

The best advice is to do what works as long as it is reasonable. The child should never be punished for stuttering. Parents, particularly mothers, have an intuitive sense about how to help their child overcome problems including stuttering, and thus it can be beneficial to know what things you have done that help your child and continue those that improve fluency. If the suggestions upset your child or do not seem to help, explore other possibilities of parental intervention.

Specific advice includes having the parents talk more slowly and quietly to their child. We suggest that they talk openly about the problem and/or about the way the child talks; they can "talk about talking," about easy talking, quiet talking, slow talking, or whatever they feel might be beneficial. If the child is having a particularly bad day, they can engage him in activities requiring little talking or short, simple responses. The parent should not be afraid to experiment and should try all kinds of things, using those which are most effective and informing the speech clinician about all successes and failures.

The parents are not given a list of do's and don'ts but are trained to identify their child's stuttered words and develop procedures that are effective do's and don'ts unique to their child's environment. Determining appropriate management procedures for stuttering is much like determining disciplinary procedures for your child; if one thing doesn't work we try something else. Generally, it is apparent or quickly becomes apparent that what works for one child in a family does not work with the other child or children. And, of course, with some children nothing really seems to be effective and we may need to seek assistance. We should realize that our effectiveness may depend on awful lot on the general makeup or personality of the child.

One Word of Caution

As with anything we do, we shouldn't overdo it. If something is said to the child every time he opens his mouth, it may become upsetting and not be beneficial — even though it won't be harmful or cause the stuttering to worsen. It will do no good to stop the child, particularly while he is speaking fluently, and ask him to repeat a word on which he stuttered. Primarily we should follow the rule of giving suggestions only when the child is having obvious difficulty communicating because of the frequency and particularly the severity of the stuttering. Some parents have developed effective hand signals or gestures to remind the child when he begins talking too fast, too loud, too hard, or in a way that results in discoordination and stuttering.

When to Refer: Guidelines for Parents and Professionals

The best guideline for the professional to follow is to listen to the concerns of the mother. If the mother states that the child is stuttering and it's a problem for either the child or the parent, do not hesitate to refer them to a speech clinician. It's rare that parents cannot easily distinguish between normal developmental nonstuttering disfluencies and stuttering disfluencies or determine whether the rate and severity of stuttering is causing communication problems.

An important point to remember is that young children tend to be cautious about what they say and how they say it, using short telegraphic phrases or even a different manner of speaking and thus can often speak fluently during an interview or while answering questions in the office of any professional. Always ask the parent if the stuttering or manner of speaking heard during the interview is characteristic of what the child typically does. Remember that children tend to stutter most when they are happily excited or when they are relaxed and engaging in a meaningful conversation with someone they enjoy being with and talking to, usually a mother.

"The best guide for the professional to follow is to listen to the concerns of the mother."

". . . children tend to stutter most when they are happily excited. . . ."

The need for referral can also be determined by answering and evaluating the results of the following five questions:

1. How old is the child? Many children begin stuttering with the onset of speaking, while others begin around 2½ to 3 years or at about the time they begin using two- and three-word phrases, with the majority beginning by 5 years of age. The preschool and young school-age child up to about 9 or 10 years of age finds it generally easier to change speaking patterns and overcome stuttering than do older children and adults. Fluency training is most successful when initiated near the time when stuttering first begins and thus early referral is necessary.

2. How long has the child been stuttering? If the child has been stuttering for six months or longer, immediate referral to a speech clinician is advised. Many children (somewhere between 40 and 50%) do overcome their stuttering due to parental intervention, development of language skills and/or maturation (neurologic development leading to improved motor skills), but the majority do not and thus early intervention and fluency training are necessary.

3. Is the severity of stuttering increasing? The severity of stuttering may be expected to increase gradually as the child's language develops and the demands of increased length and complexity of expression require greater coordination of the speaking mechanism, but we frequently get reports that the stuttering began overnight or developed to its greatest severity within a week or two and then remained rather stable except for episodic periods of fluency (which are to be expected even with the most severe child). In general, the more frequently the periods of fluency occur, and the greater their length, the better is the prognosis that the child will overcome the stuttering;

however, if an extended period (6 months or so) of increasing severity is reported, professional help is necessary.

4. What type of stuttering is the child exhibiting? If the child exhibits primarily prolongations and/or struggle behaviors, immediate referral is necessary. If the types of stuttering are whole-word and part-word repetitions the mother should observe the stuttering for 3 to 6 months to see if the problem remains stable or decreases in severity. If stuttering persists, even though mild to moderate, it is advisable to refer the child before he/she enters school. As a result of Public Law 94-142, public school speech clinicians can provide services for preschool children and definitely should not delay fluency training with kindergarten children.

5. Is there a history of stuttering in the family? If the father or mother or close relative stutters and the child has a moderate to severe stuttering problem, the need for referral and fluency training is seldom questioned. Contemporary literature indicates that there is a genetic basis for stuttering; however, a family history of stuttering is not conclusive evidence that it was inherited.

What Can I Expect from Professional Fluency Training?

At the East Carolina University Speech and Hearing Clinic we have been engaged in direct fluency training with the beginning stutterer (ages 2 to 10 years) since 1974. A followup study of the first 18 children enrolled in the program (1974 through 1979) revealed that all 18 established normally fluent speaking patterns and all but one maintained fluency. The one child who regressed was severe when enrolled and was found to have a mild to moderate problem when re-evaluated four years later. His current prognosis for re-establishing fluency is good. During the past four years we have worked with approximately 30 more young stuttering children, four of whom had difficulty establishing or maintaining fluency. Prognosis for only one of the four is poor because of the severity of his involvement and his resultant inability to change his speaking patterns.

The average time it takes a child to establish fluency has been sixty 40- to 50-minute sessions spread over a 9-month period. Two children established fluency in less than 20 sessions and it took almost 135 for two others and almost 200 sessions for one child.

Summer Residential Program for the Beginning Stutterer and Parents

A 3-week (June 25 through July 13) intensive fluency training program for 15 stuttering children (ages 3 to 10 years) and their parents is being planned at East Carolina University for the summer of 1984. The program will include 3 hours of fluency training per day, one hour of music therapy, and one hour of adaptive motor training. Parents will participate in a parent training/counseling program designed to help them understand stuttering and help them work directly with their own child. For additional information, write to the author at Speech and Language Department, East Carolina University, Greenville 27834.

Referral Sources and Where to Seek Assistance

An excellent book available for parents and for professionals advising parents is written by Dr. Eugene B. Cooper and is entitled *Understanding Stuttering*. It may be purchased by sending $2 to The National Easter Seal Society for Crippled Children and Adults, 2023 West Ogden Avenue, Chicago 60612.

The Board of Examiners for Speech and Language Pathologists and Audiologists publishes a directory of licensed personnel practicing in North Carolina. The address is Post Office Box 5545, Greensboro 27435-0545.

The North Carolina Speech, Hearing, and Language Association publishes a directory listing institutions and professionals practicing in North Carolina. The address is Terry N. Delagrange, Editor, NCSHLA Publications, 321 W. Wendover Avenue, Greensboro, NC 27408.

Transdermal Delivery System — A Unique Drug Dosage Form

Jim Worden, Pharm.D.

For many years, physicians and other health care providers have been searching for the ideal drug dosage form — one that is safe, effective, easy to use, and affordable to the patient. Conventional drug dosage forms such as tablets, capsules, ointments, injectables, liquids, etc. have all stood the test of time in therapeutic prescribing, but each offers disadvantages to the patient. For example, while injections usually provide quicker onset of therapeutic effect than tablets or capsules, they are not as easy to administer and often cause more discomfort than oral dosage forms. Similarly, attempts at improving patient compliance by increasing the duration of a drug's action and subsequently reducing the number of daily dosages may result in increased patient medication costs due to new product formulations. In an attempt to minimize these disadvantages in drug delivery to the patient, medical researchers have recently developed a unique delivery system that utilizes the patient's largest organ, the dermis or skin.

Although several pharmaceutical companies have done research in the development of this new topical or transdermal drug delivery system, Ciba Pharmaceutical Company laid "first claim" to this novel approach several years ago when they marketed the anti-nausea drug, scopolamine, in their transdermal delivery device. This system, similar in appearance to a small circular bandage, was designed to be worn behind the ear and to release a constant amount of scopolamine over a twenty-four hour period.

Two other companies, Searle and Key Pharmaceuticals, then formulated variations of the original transdermal delivery system to further optimize drug delivery to the patient. These companies, in addition to Ciba, have recently marketed three slightly different transdermal systems for the delivery of nitroglycerin, a drug effective in the prevention and treatment of chest pain.

The controlled release transdermal systems currently available fall into two main categories, namely those in which the drug (nitroglycerin) is stored in a membrane sealed reservoir and those in which the drug is contained within a matrix or latticework arrangement. In the reservoir design, the drug is stored in a single compartment where it migrates through a rate controlling membrane to the underlying skin. This system provides a constant release of the drug to the patient. In the matrix design, the drug is uniformly dispersed within a gel-like matrix through which the drug slowly diffuses. Drug release from such matrices follows a constant rate. One of the three systems even combines the principles of the two designs. So far, no studies have indicated that one transdermal system is superior to another.

Although these products employ differently engineered diffusion systems, all three systems contain topical nitroglycerin in small adhesive bandages that slowly release the drug over a twenty-four hour period. The drug is absorbed from the skin into the blood vessels that run under the skin and then into the general circulation. This bypasses problems associated with oral dosage forms whose effects are often variable due to changes in stomach absorption or inactivation by liver enzymes. In addition, the transdermal systems usually afford constant drug delivery to the patient, thereby minimizing periods of time when the patient may receive too little or excessive amounts of the drug due to physiologic variables. Other advantages realized include 1) avoidance of risk and inconvenience of intravenous therapy, 2) ability to utilize drugs with a short duration of action, which previously presented dosing difficulties, 3) allows rapid termination of drug input by removal of the patch from the skin surface, and 4) provides for increased patient compliance, as the medication schedule is simplified. This has been a problem with the use of nitroglycerin ointment which is not only somewhat messy to apply, but also requires frequent application (usually every 6 to 8 hours).

While there are many advantages in using the transdermal nitroglycerin system, its cost largely prohibits widespread use in medicine today. As a general rule, these systems cost two to three times more than the conventional nitroglycerin preparations (capsules, ointment, etc.). Unfortunately, this unique drug delivery system falls somewhat short of our definition of an "ideal" drug dosage form.

As with other nitroglycerin preparations, the most common side effect

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From the Department of Pharmacy Services, Pitt County Memorial Hospital, Box 6028, Greenville, NC 27834

noted with the transdermal systems is a transient headache, which often diminishes as therapy continues. However, it may require treatment with an analgesic. Other possible side effects include dizziness, a transient fall in blood pressure, and facial flushing. Your pharmacist or physician should be notified if you experience these effects during nitroglycerin therapy.

Well controlled clinical studies have found the new transdermal preparations to significantly decrease the frequency and duration of chest pain. In addition, patients have demonstrated a high rate of acceptance of the new systems over other nitroglycerin preparations. However, the transdermal systems are not intended for the immediate relief of chest pain, as are the sublingual tablets.

If you are prescribed one of these new nitroglycerin patches, there are several important points to remember concerning their use. Each of these new systems is recommended for application to areas of the chest or upper arms that are free of hair; however, any skin area except the hands, feet or head may be used. Application sites should be rotated daily to prevent skin irritation. Skin areas with scars, calluses, folds, irritation or damage should be avoided because variable absorption may occur in such areas. The patches are applied once daily at the same time, preferably at bedtime. While the transdermal patches can be worn while showering without loss of effectiveness, only Ciba's product may be worn during swimming without loss of potency. Further information concerning application of the transdermal units may be obtained from your local pharmacist.

In summary, the transdermal drug delivery system offers a unique mechanism for improving drug therapy to the patient. This system could play an important role in many fields of medicine, where a wide range of important drugs exists that are suitable for transdermal delivery. These areas include the treatment of hypertension, pulmonary malfunctions, and central nervous system disturbances. Only future trials and experience with this drug delivery system will dictate its final place in medical therapy.

Freckles, Moles, and Melanomas

Claude Burton, M.D., Peter Heald, M.D., and J. Lamar Callaway, M.D.

"Can you check this mole and tell me if it is all right?" This question is frequently posed to many physicians every day. The frequency of this query reflects an increase in concern about pigmented lesions. Many patients are unfamiliar with darkened spots on the skin and it is the purpose of this article to review the different types of darkened (pigmented) spots on the skin.

The brown pigment of the skin is melanin which serves to protect us from the harmful rays of the sun. During our prenatal development the cells that make this pigment move into the skin and start manufacturing melanin. The skin itself does not make melanin; it must be made by the small melanin factories known as melanocytes. During one's lifetime melanin production can be stimulated by sunlight and destroyed by injury to the skin. You can see an example of that kind of injury in burn sites where the melanin producing cells are destroyed and the scar is very white.

Darkened spots on the skin can come from a variety of sources. A localized increase in melanin production is one cause. Examples of this include the comman freckle, the mask of pregnancy, and the so-called "liver spots" on the back of one's hands. Freckles frequently arise in sun-exposed areas of the skin, especially after a sunburn. They are more common in fair skinned people who are more susceptible to sunburn. Freckles are always flat. The mask of pregnancy consists of a brown darkening of the skin primarily over the cheeks in pregnant women. This may also arise in women who use oral contraceptives. The mask of pregnancy results from a combination of sun and hormone stimulation of pigment production. "Liver spots" are also flat darkened spots which have nothing to do with one's liver. These occur in sun-exposed areas and are also related to the cumulative effects of sunlight on the backs of one's hands.

The treatment of all of these conditions involves sun protection. The use of a #15 sunscreen will decrease the sunlight stimulus to the darkening process. Attempts to lighten these spots involves destruction of the skin by physical means such as liquid nitrogen, cryosurgery, or by chemical means such as bleaching creams. Bleaching creoms soak through the skin and interrupt the melanin production. These are often successful; however, uneven bleaching may occur with an unsatisfactory cosmetic result.

Another cause of dark spots is a locolized increase in the number of melanin producing cells. These spots are called nevi (singular form — nevus). Nevi are by definition benign and should not be confused with the malignant collections of melanin-producing cells which are known as melanomas. The nevus is also referred to as a mole, and a melanoma is often referred to as a mole cancer.

A nevus (or mole) has a life cycle unto itself. It may be present at birth in which case it is called a congenital nevus, or it may arise in childhood or adulthood and be called an acquired nevus. As a nevus ages it frequently becomes thicker and thus can frequently be felt whereas a freckle is flat and has no feel to it. As a nevus approaches the end of its life cycle it may involute and become thin and frequently be replaced by small amounts of fatty tissue. The ability of a nevus to grow and change during life frequently brings it to the attention of physicians. Patients are routinely instructed to notify their doctor if they have noticed a change in a mole. While a physician may use the physical findings of even pigmentation and lack of ulceration as signs of a benign nevus, there is no absolute way to determine the benign or malignant nature of a darkened spot on the skin other than by performing a biopsy. Once a biopsy has confirmed the benign nature of the nevus the mole can be removed surgically, with liquid nitrogen, or with dermabrasion.

The cause of much concern over darkened spots on the skin is the increasing incidence of melanoma in our population. There are at least five clinical settings in which melanoma is seen. In children a melanoma may arise in a congenital nevus. There appears to be an increased incidence of melanoma in congenital nevi that are not removed. Unfortunately many congenital nevi are so large that the risks involved in removing them are greater than the risks of developing melanoma. There is no firm percentage as to the number of cases that will progress to melanoma from congenital nevi, although it has been stated to range from 5% to 30%. Another setting which may give rise to melanoma is that of the dysplastic nevus. The dysplastic nevus is one that does not look entirely benign on biopsy but also does not have enough features to classify it as a truly molignant melanoma. These are unusual moles which tend to run in families. As with the congenital nevus, the dysplastic nevus should be removed unless the risk of removal is greater than the risk of developing melanoma. A third type of setting which may produce melanoma is in the sun-exposed areas of older individuals. This type of melanoma is known as lentigo maligna melanoma. A fourth type of melanoma syndrome which is recognized is called acral lentiginous melanoma. This refers to the location of the melanoma, being on the hand or foot. Should any patient notice a mole enlarging on the fingers, palms, or soles, this should be studied histologically. The fifth clinical setting of the melanoma is that arising from no particular predisposing mole or location.

While there is a definite increase in the incidence of melanoma there is also a marked increase in survivol and cure. The interpretation of these findings is that patients and their physicians are becoming much more aware of melanoma and this is leading to earlier diagnosis and an earlier diagnosis means a greater chance of cure. Melanomas are always treated surgically. The decision to remove lymph nodes in the area surrounding a melanoma depends on whether or not these are enlarged. Even in advanced cases of melanoma there is a role for chemotherapy and immunotherapy. The latter involves a variety of means to stimulate the immune system to fight the mole cancer.

When patients consult their physicians concerning a darkened lesion of the skin it is worthwhile asking about ways to reduce their chances of ever developing a melanoma. The evidence is clear that sunlight plays a role in the generation of this cancer. For that reason sun protection is advisable, including physical protection with hats and long sleeve shirts. The routine use of a #15 sunscreen is also recommended. As with many other therapies the involvement of patients in daily activities to prevent disease reminds them of their physician's concern for their well-being. This leads to more compliant patients and more satisfied patients in the long run.

TOXIC ENCOUNTERS

Death, The Ultimate Cure For Insomnia—Placidyl Overdose

Ronald B. Mack, M.D.

I ADMIT I'm biased against certain drugs and I'll also admit that I do not suffer from insomnia, but nevertheless Placidyl is one drug I am not happy to deal with, especially in overdose. Placidyl, AKA ethchlorvynol, is a tertiary acetylenic alcohol introduced in the mid-1950's as a sedative-hypnotic. These days when it is used at all it is usually prescribed as a hypnotic. Even the 1983 PDR treats it with respect: "indicated as short-term hypnotic therapy for periods up to one week in duration in the management of insomnia." Placidyl is a good name for this drug, in my opinion, because if taken in overdose it can make you as placid as you ever would care to be.

Ethchlorvynol is very similar to the barbiturates and seems to have competed over the years with this group of drugs as a sleep-inducing agent. In a therapeutic dose of 500 mg, when used as a hypnotic for an adult, it has a very rapid onset of 15 to 30 minutes. It is rapidly absorbed from the gastrointestinal tract and peak plasma levels occur within two hours after a single oral fasting dose. The usual duration of the hypnotic effect is approximately 5 hours. Very little or none can be detected in the blood three to six hours after ingestion. Why is that you say? Where did it go, you ask? Well, does the drug leave the patient's body at this time and end up in the commode? No, it definitely does not and herein lies the problem when Placidyl is taken in overdose. After the drug rather quickly exits the vascular system it is rapidly and rather completely distributed to body tissues, especially adipose tissue and most particularly the brain (Why do you think it puts you to sleep? Be reasonable!!). In the brain this chemical is concentrated and stored for long periods. In fact, Placidyl concentrates in the brain at higher levels than in the serum. In other words, this stuff goes in easily, but comes out very slowly. Even in therapeutic doses the T½ (half-life) is 10-25 hours. There is one redeeming feature of ethchlorvynol: it apparently does not induce hepatic microsomal enzymes (unlike phenobarbital which does).

In terms of inducing sleep, Placidyl acts to depress the CNS in a manner similar to the barbiturates and thus is said to induce sleep by *decreasing* REMs (rapid eye movements), wake time, sleep latency and Stage IV sleep and by *increasing* Stage II sleep and total sleep time. The EEG pattern following ethchlorvynol ingestion also resembles that following the barbiturates.

Not surprisingly, Placidyl resembles barbiturates when taken in overdose. That is to say that they share the clinical features of *hypotension, bradycardia, areflexia, coma* and *cardiopulmonary arrest*. In Placidyl overdose, *hypothermia* is quite a consistent feature; mydriasis and pulmonary edema are fairly common as well. At times excessive salivation can occur which resembles a cholinergic crisis from an organophosphate insecticide poisoning. Probably two of the more characteristic features of ethchlorvynol overdose are: (1) a distinct *pungent odor* to the patient's breath and GI contents and (2) *prolonged coma* which is really the hallmark of this overdose situation. The half-life (T½) in overdose is 21-105 hours and if the patient ingests 15 or more grams in a single overdose, the T½ extends from 102 to 288 hours. Now that's what I call a Big Sleep!! The exact lethal dose in adults of ethchlorvynol is unknown but probably is in the range of 10-15 grams (a common hypnotic dose when used therapeutically is 200-500 mg). Lethal blood levels are not known exactly either but known lethal serum levels are in the area of 13-15 mg/dl which is ten times the blood concentration reached after a bedtime dose of 1 gram. Toxic levels are generally in excess of 2 mg/dl. When death occurs as a result of ethchlorvynol overdose, it is usually from respiratory failure, prolonged unresponsive hypotension or the complications of extended coma.

The treatment of this very toxic encounter may be the most intriguing part of this entire problem. Rather obviously, meticulous supportive care is mandatory, especially for *respiratory* and *cardiovascular* functions. The hypotension part of the toxic insult should be treated initially with intravenous fluids, being careful not to overhydrate because of the propensity for pulmonary edema. If these fluids fail to raise the blood pressure then one can resort to vasopressor agents. Forced diuresis is not effective, it is not recommended and may be dangerous. Unchanged ethchlorvynol is excreted in the urine in quite small quantities and therefore will not be helped by forced diuresis or alkalinization as in phenobarbital intoxication. Hypothermia, which is such a common feature of Placidyl overdose, should be carefully treated with temperature controlled water blankets.

It is of course a good idea to try to empty the patient's stomach even many hours after ingestion. Here caution must be exercised!! Because CNS depression occurs so rapidly after ingestion (even in therapeutic doses), syrup of ipecac may not be such a wise choice. "Careful" gastric

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From the Department of Pediatrics, Bowman Gray School of Medicine, Winston-Salem 27103.

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lavage (if such a procedure exists) is probably a safer maneuver if the airway is protected.

And now for the big question that all of you want to ask — how do you get the ethchlorvynol out of someone in coma now that we know that this hypnotic is "sucked" into the CNS even in therapeutic dose? Good question!!

For severely intoxicated comatose patients it sure would help to rid the body, especially the CNS, of as much of the drug as possible. For this problem *extracorporeal detoxification procedures* are indicated. (What did he say?) There are at least four techniques that could accomplish this extracorporeal detoxification: (1) *hemodialysis* — does not improve the clinical picture in Placidyl overdose. In the recent past an oil, such as soybean oil, was used in the dialysis procedure but is now not recommended because it is not effective; (2) *peritoneal dialysis* is not very effective at all in this poisoning; (3) *hemoperfusion with charcoal* has been used with some success in terms of clinical response (i.e., coma); (4) *resin hemoperfusion* seems to be the current procedure of choice in severe Placidyl overdose. In this procedure, Amberlite XAD-4, an uncharged exchange resin, is used in the following manner: blood from a large artery or vein is perfused through a column of styrene divinyl benzene copolymer (Amberlite) which has specific absorptive sites for lipid soluble molecules and the blood is then returned to the body via a large vein. Hemoperfusion is often no picnic and just some of the complications include: anemia, thrombocytopenia, hypocalcemia and pancreatitis.

A big problem in any drug overdose for which you would consider extracorporeal detoxification involves the concept of *volume of distribution*, V_D for short. Do not be fooled, the V_D does not stand for venereal disease — I know that some of you have wondered what little boy and girl capsules do all bunched together tightly in a container and lots of time on their hands. In any event, V_D is a theoretical concept: it refers to the amount or quantity or volume of a liquid that a specified dose of a drug appears to equilibrate or distribute into the body or the degree to which a drug is diluted or an entity that expresses the extent to which a drug passes from the plasma to peripheral tissues.

$$\text{The volume of distribution} = \frac{\text{Dose}}{\text{Concentration in plasma}}$$

Very generally speaking, drugs with a volume of distribution < 1 liter/kg can often be removed by dialysis or hemoperfusion whereas drugs with a $V_D > 1$ liter/kg are difficult to remove by these methods. For instance, theophylline and chloramphenicol have low V_D and could be removed by extracorporeal means in overdose situations whereas digitoxin (V_D 40 ± liter/kg) and imipramine (V_D 20-40 liter/kg) have very high V_D and dialysis or hemoperfusion are not likely to be successful. The V_D of ethchlorvynol is 4 so it is not a perfect candidate but resin hemoperfusion appears to be better than other procedures in this poisoning. The indications for hemoperfusion in ethchlorvynol poisoning include (1) prolonged coma with life threatening complications despite intensive supportive therapy, (2) ingestion of > 100 mg/kg, (3) ingestion of a potentially fatal dose (in an adult $= > 10$ grams), (4) serum levels > 10 mg/dl in the first 12 hours or > 7 mg/dl after 12 hours.

It is wise for the reader to remember that preschool children who swallow a poison usually ingest a single item whereas teenagers and young adults typically indulge in polypharmaceutical suicide attempts/gestures. Do we really need hypnotics like ethchlorvynol or methaqualone? Surely they are probably no more effective than benzodiazepines and considerably more dangerous when taken in overdose. Why take anything at all to sleep, do as I do when I can't fall asleep with ease — I put on my favorite phonograph record "The Dallas Cowboy Cheerleaders sing Henry IV part I," and away I go.

CAROLINA HISTORY

The Early Years at Bowman Gray

George T. Harrell, M.D.

LOOKING back, it is incredible that anyone would have the audacity to start a new 4-year medical school with such an extremely limited commitment of resources. The background and negotiations over several years for the move to Winston-Salem have been recorded by Carpenter.[1] Those of us who came at the beginning did so because of a desire to teach and our belief that support from a wealthy community would develop.

Wake Forest College had run a small 2-year medical school in eastern North Carolina since 1905. The 2-year school was proud of the record of its students when they transferred to 4-year schools, usually in Philadelphia. Almost all graduates went into practice. Few were interested in research which they saw conducted only by Camillo Artom, a displaced Italian biochemist of Nobel caliber. Classes were small — in the range of 35 students — and the curriculum was traditional, based on lectures. Faculty largely supported itself by outside practice such as the surgical pathology service offered by mail to small hospitals and individual physicians. Administrative activities were minimal and informal. The professor of anatomy, Herbert Vann, was the admissions committee. For five years, Coy Carpenter, the professor of pathology, served as dean without the title. That pattern of a young teacher doing day-to-day administration under an older nominal head would continue when the school moved to Winston-Salem.

During the last year on the old campus, the support from college funds was only $24,500. The Bowman Gray bequest of shares in the R. J. Reynolds Tobacco Company had a market value of approximately $600,000. These monies and access to the obsolescent 106-bed North Carolina Baptist Hospital for clinical teaching were the only resources available to the new 4-year school. A medical school building had to be constructed and more hospital beds added.

The Move. The trustees of the College and Hospital jointly met and on August 3, 1939 agreed to the move to Winston-Salem. The medical school building, planned by the basic science faculty, was built by the fall of 1941; at that time the faculty at Wake Forest who were to move had come and begun teaching. The west wing of the hospital with 24 additional beds was also completed that fall. No special provision was made for clinical faculty offices or laboratories. All patients would be seen in the Baptist Hospital which would provide clinic examining rooms. Most clinical faculty positions would be geographic fulltime and filled by practitioners already established in the community who would move to the School with their patients.

Figure 1. *George T. Harrell, M.D.*

The first fulltime clinical appointment, as Assistant Professor, was offered May 9, 1940 to George Harrell, the rising chief resident in Medicine at Duke. He had been sent earlier by Professor Frederic Hanes to City Memorial Hospital in Winston-Salem to serve temporarily as pathologist and director of laboratories from mid-December 1937 through June 1938. During this period he worked with all the local clinicians who ultimately came on the faculty. The first clinical pathologic conferences (CPC) in the city were organized and the services of the laboratory offered on a consultative basis for problem cases.

The Dean, Coy Carpenter, offered faculty appointments with admitting privileges to all physicians in the city without requiring a clear commitment from them for teaching duties. Fortunately, not all accepted, but it posed problems later with some who did. It first was proposed that Wingate Johnson, president of the Board of Trustees of the College, a beloved internist and family physician in the city, be the head of the Department of Medicine. He was known nationally for his work with medical societies. The day-to-day supervision of clinical clerks and details of teaching and administration would be handled by Harrell, who was formally appointed on May 27, 1940.[2] His basic annual

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From 2010 Eastridge Road, Timonium, MD 21093.

salary was $2400, with the privilege of earning up to $600 in addition.

The same pattern would be followed in Pediatrics with Leroy Butler as the Professor and Robert Lawson, Assistant Professor, as the young administrator without portfolio who would come a year later. It was apparent that to get immediate acceptance by the medical academic community it would be desirable to bring in several heads of departments with established teaching reputations and research experience. The first appointed was Howard Bradshaw, a rising young thoracic surgeon from Philadelphia. He supplemented general surgery by appointing excellent local practitioners, Arthur Valk and William Sprunt. Later, competent persons from the practicing community also headed the divisions of Urology (Fred Garvey), Orthopedics (Robert Moore), Otolaryngology (James Harrill), and Anesthesiology (Roscoe Wall). Obstetrics was headed by Frank Lock, a young, personable clinician from New Orleans without research or administrative experience. Radiology was hospital-based and headed by a superb local physician, J. P. Rousseau, who practiced as a diagnostic consultant.

Medicine was considered the key clinical department. Several people suggested Tinsley Harrison, a charismatic teacher and clinical cardiologist at Vanderbilt who was active in cardiovascular research, to head the department. He was ready to assume administrative responsibility and felt medical education needed a drastic overhaul. He was appointed Chief of Medicine in January 1941 and, at the same time, the more appropriate title of Clinical Professor of Medicine was given to Johnson.[3] Johnson would head a private diagnostic clinic (PDC) to be modeled in general after the successful one at Duke. Harrison never admitted patients but conducted a consultative practice outside of the PDC. Two practicing internists in the city, Robert McMillan and Elbert MacMillan, were added. Harrison brought a young research fellow with him, John Williams, and soon added an experimental pharmacologist, Arthur Grollman, to complete the original fulltime staff.

The appointments were effective July 1, 1941. Since it had not been possible to arrange for use of beds in the other city hospitals, no clinical teaching of medical students was planned the first year. The rising second-year class of 30 was brought from Wake Forest and a first-year class of 45 admitted. Space was taken from basic science departments to house some clinical faculty. The Department of Medicine, for example, was placed in one large room originally designed as the pharmacology teaching laboratory. It was agreed that all inpatients on all services would be used for teaching. The hospital had no house staff, so the interns and residents had to be brought in from other institutions.

Clinical teaching at the beginning was informal and directed to the house officers. To set a tone of clinical expertise and high standards, weekly evening CPCs were begun and directed to practitioners in the surrounding area. Harrison gave most of these, using cases already published in the literature. Johnson began an innovative course for the students called "Broader Aspects of Medicine." Speakers from the area with widely diverse backgrounds taught the course. Harrell, using the format that he had begun in the Department of Pathology at Duke, began to teach the application of material being presented by the basic scientists to the clinical problems which would be handled later when the students became clinical clerks and residents. Beginning with neuroanatomy and histology in the first weeks, he brought patients into the various laboratories to illustrate anatomic and physiologic principles, not diseases. Surgery sent fellows and house staff to assist in the dissecting room. These teaching techniques were accepted avidly by the students. The first five years of experience with this approach ultimately was described in detail by Harrell and Vann.[4]

The efforts at correlation of subjects covered by the curriculum led to lengthy discussions of how the administrative organization of the school might be altered. Harrison took the lead and proposed four major divisions: structure, function, medicine, and surgery. The departments would be assigned to a division, but would retain their budgetary autonomy and authority over their faculty. The projected changes did not alter traditional patterns of patient care. Administrative tensions were raised by the proposed changes and may have been partially responsible for Harrison's move to Dallas.

The War Years. The school had been teaching only three months when Pearl Harbor was bombed. Much of the program proposed in the newspapers in 1940 was changed. The faculty roster was frozen at the 1941 level even though the clinical teaching had not started. The fulltime clinical faculty was present only in skeleton form and most disciplines had only one person. To add faculty it was necessary to recruit people who would not be acceptable for military service, such as those with peptic ulcer. As a result, the school went through the war with the smallest fulltime faculty of any four-year U.S. school.

The military saw the need for many more doctors than had been envisaged for civilian practice in the immediate pre-war years. Accordingly, the school was told to increase class size to the range of 60 and then to teach in nine months what previously had been covered in 12. New courses in tropical medicine, chemical warfare, and preventive medicine had to be added. All these new courses were assigned to Medicine and to its single faculty member interested in infectious diseases, Harrell.

Research funds were extremely scarce and limited entirely to small grants. Projects tagging lipids with cyclotron-produced isotopes continued in biochemistry which set the scientific standard for the school. In the clinical departments, research had to revolve around patients. Pediatrics studied poliomyelitis; Surgery, thoracic operative procedures; Obstetrics, marital and sexual problems from a behavioral point of view; and by the cardiovascular people in Medicine, chest pain, early ambulation after coronary occlusion and hypertension in rats. A small epidemic of endemic typhus in the business area of the city quickly was controlled with advice from Medicine. The much more virulent and dramatic rickettsial disease, Rocky Mountain spotted fever, occurred in the Piedmont area and led to a series of studies in which students, house staff, dietitians and faculty from Medicine, Pediatrics, and hospital laboratories participated. A grant of $7500 to Harrell had to cover research costs for the spotted fever work over a three-year period.

Teaching in Medicine immediately ran into philosophic disagreements. Harrison believed that all levels of students could be taught simultaneously by ward walks and amphitheater clinics. In effect, these exercises were pitched at the level of the house staff. Harrell and some of the other department members felt second- and third-year students were beyond their depth with this technique and that teaching exercises should be graded to the student's level with planned repetition over the years as their increasing knowledge and experience accumulated. Harrell studied the ways that teaching facilities could be arranged for clinical students. With budgets of $250, the clinical students' laboratory and the nursing station on the hospital medical ward were revised. The designs were shown in exhibits at medical meetings and the principles later were incorporated in the postwar new hospital South Wing, completed in 1954, which raised the bed total to 346.

The pressures and tensions of the war period accumulated and led to the resignation of Harrison in March 1944 after only two-and-one-half years in Winston-Salem. He left for Southwestern Medical School in Dallas to fulfill a long-held desire to be a dean, even though he frequently had stated his dislike for administration. The rest of the Department of Medicine remained together throughout the war. Losses in other departments were negligible; a few new faculty, including David Cayer in Medicine, were added.

With Harrell's promotion to Associate Professor and Director of the department on Harrison's departure, teaching in Medicine was revised. Manson Meads was recruited, became the school's first Markle Scholar and remained as an administrator, culminating as the vice-president for health affairs. Laboratory and therapeutic rounds were begun. Oral examinations during the third year were instituted, emphasizing the basic science aspects of the problems presented by the student's diagnosis of his own patients. The fourth-year students, assigned to private patients, in lieu of an examination, wrote a paper correlating a review of the basic science literature with a clinical problem they had encountered. The subject was cleared with the Director and after his critique many were published. All CPCs now were of cases from the Baptist Hospital which students had studied. Selected ones regularly were published over a period of years in this *Journal* as a contribution to continuing education. Exhibits were shown at medical meetings on a variety of subjects and helped to acquaint the profession with the school. Though no effort was made to prepare students for academic careers, a number of graduates from the early classes became professors, deans, vice-presidents, or higher level administrators.

The Immediate Postwar Years. With the end of the war, department chairmen in Physiology and Bacteriology changed. New departments of Preventive Medicine and Psychiatry were formed. The flood of returning veterans to residencies was accommodated in a new wing to the hospital which raised the bed total to 270 in 1943. It had been apparent for some time that the existing site of 11 acres was totally inadequate for the growth needed and expected. Discussions with potential donors took place. Part of a magnificent site of 99 acres, the Graylyn estate, overlooking the city had already been given to the school. When the manor house was added in 1946, some faculty urged that a new medical school and hospital be built on Graylyn and the old campus be sold and converted to apartments. At the Dean's suggestion Harrell drew several alternative schematic plans for the Graylyn site. Wake Forest College opposed any move that would require local fund raising by the medical school, even though the Graylyn site was across a highway from Reynolda, the R. J. Reynolds estate. Discussions at a low level had gone on for several years with the Reynolds family about the possibility of moving the College from Wake Forest to Winston-Salem. Ultimately, Reynolda was given as the present campus for the College, but the medical school was left some miles away.

On the suggestion of Dean Davison of Duke, Harrell became heavily involved in the establishment of the medical program at the Oak Ridge Institute of Nuclear Studies and served for many years as its chairman. Since Bowman Gray was the closest medical school, short-lived isotopes became available for the research on alteration in permeability of membranes with fluid and electrolyte changes in infections, in myxedema, and for studies on liver metabolism. Three scientific exhibits on these subjects won first or second place awards at national meetings for the Department of Medicine. These exhibits led to Harrell's participation in two International Physiologic Congresses. On one in Oxford, England he was invited to visit with Flory in his laboratory to discuss the research shown in exhibits he had seen. Flory arranged a tea and a lively discussion ensued. Lectures in Holland, Belgium, and Italy followed.

From this small unit at Bowman Gray came the first presentation given at a national meeting on the clinical usefulness of aureomycin. The recognition of the rickettsial research attracted the attention of local donors who proposed a "living endowment" by giving income but not capital to support a research professorship. A requirement was that it be given to Harrell. The Dean interpreted the gift to mean a fulltime commitment to research with no teaching or administrative duties. Harrell was given no choice. After 11 of the happiest years of his professional life, teaching and working with students, he suddenly was not doing what he came to Bowman Gray to do. More time became committed to work with National Advisory Councils of the Public Health Service, voluntary health agencies, the Association of American Medical Colleges, other national organizations, and study committees. The experiments with architectural features for medical education and with the curriculum led to the offer to become founding dean of the new four-year school at the University of Florida in Gainesville.

George Harrell left Bowman Gray January 1, 1954.

Acknowledgment

Katherine Davis of the Office of Vice-President for Health Affairs at Bowman Gray furnished much helpful information.

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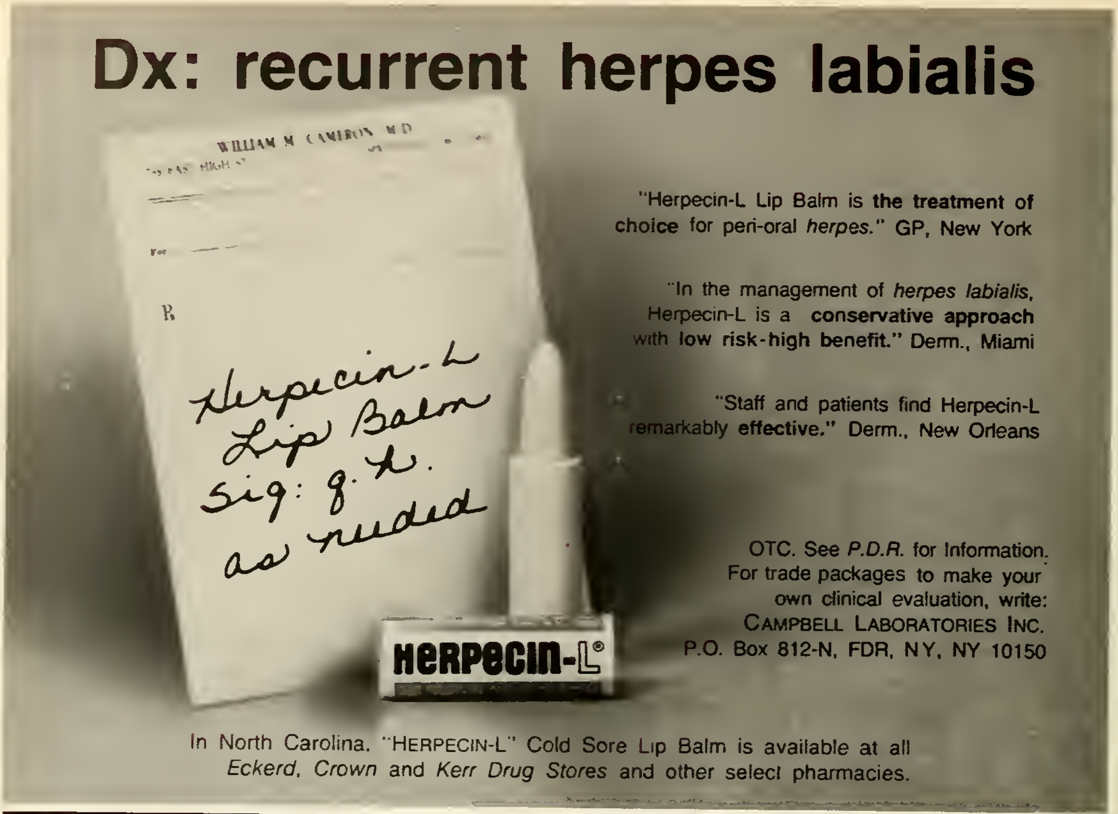

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CAROLINA HISTORY

The Contribution of a Great Man to Wake Forest University and Its Bowman Gray School of Medicine — Tinsley R. Harrison, M.D.

Robert P. Morehead, M.D.

ON July 1, 1941 Dr. Tinsley Harrison came from Vanderbilt to Winston-Salem and officially assumed his duties as the first Professor of Medicine in the newly-formed Bowman Gray School of Medicine of Wake Forest College. Already recognized as one of the foremost teachers, researchers and scholars in the medical world, why did this man elect to come to a school with grossly inadequate financial resources and one in the process of expanding from a two-year to a four-year school?

Financial Resources, Physical Plant, Faculty

Although several studies had been made which placed the minimum amount of money to build a creditable four-year school at $10,000,000, Wake Forest had in hand only roughly $600,000 in endowment provided through the Bowman Gray bequest plus annual support of $22,450 provided by the Board of Trustees of Wake Forest College.

The physical plant of the four-year school was to initially consist of two connecting buildings, one to house the basic medical sciences and the geographic full-time clinical faculty and the other a 300-bed general teaching hospital. Funds to construct the former were secured at 1% interest from a Boston bank, 18,800 shares of R. J. Reynolds Tobacco Company B stock being used as collateral.[1] The latter was made possible through the willingness of the Trustees of the North Carolina Baptist Hospital to expand the existing 100 bed hospital to 300 beds.

During the five years preceding the move of the School of Medical Sciences to Winston-Salem, the basic science faculty of the school had been strengthened considerably. Among the group was Dr. Camillo Antom, a chemist of international reputation and of Nobel caliber. How could a new medical school without adequate funds attract an outstanding clinical faculty? Many in academic medicine said it could not be done. Others said the school would be second rate. The plan of the administration was (1) to appoint a small number of young men holding faculty appointments in other medical schools to the geographic full-time faculty; (2) to glean from the local community certain outstanding physicians to become geographic full-time members of the faculty; and (3) to offer staff appointments in the teaching hospital and medical school to all members of the Forsyth County Medical Society and to certain other physicians in the area, their activities being restricted to the specialties in which they had proven themselves competent (minimum requirement, certification by their respective American Board). Dr. Harrison, of course, did not fit into any of the above categories.

Prior to Dr. Harrison's appointment to the faculty, Dean Coy C. Carpenter had appointed to the geographic full-time faculty of the Department of Medicine the following: Dr. Wingate M. Johnson, clinical professor of medicine and chief of the Private Diagnostic Clinic; Dr. Robert L. McMillan, associate professor of clinical medicine and chief of cardiology; Dr. Elbert A. MacMillan, associate professor of medicine; and Dr. George Harrell, assistant professor of medicine and laboratory diagnosis. To this group of physicians, Dr. Harrison added a recent chief resident at Vanderbilt, Dr. John Williams, and an internationally-known researcher at Johns Hopkins, Dr. Arthur Grollman.

The report to follow is based primarily upon my close association with Dr. Harrison during his years in Winston-Salem (July 1, 1941-March 1, 1944), our friendship during the remainder of his life and a recorded interview held in his home in Birmingham, Alabama, February 18, 1975. Most of the material placed in quotes comes from that interview.

The recruitment of Dr. Harrison began at the suggestion of Dr. Herbert Wells who was to assume the position of Professor and Chairman of the Department of Physiology at the newly-expanded school. At Dr. Wells' suggestion, Dean Carpenter contacted Dr. Harrison and invited him to come to Winston-Salem to talk about his possible interest in joining the new school. A short while later he and his wife Betty visited the school and the city. He stated that the first person he met was Dr. Wingate Johnson, a man well known to American medicine and at that time Chairman of the Board of Trustees of Wake Forest College — "the impression he made on me had a great deal to do with my decision to accept the position." He was further "impressed by the rather striking charm and obvious integrity" of certain members of the Gray family. Following conversations with them he stated to me that he became completely satisfied with the financial status of the school when "they indicated to me they were behind the school and were going to stay behind it."

From the Department of Pathology, Bowman Gray School of Medicine of Wake Forest University, Winston-Salem 27103.

The announcement that Dr. Harrison had accepted the position as Professor and Chairman of the Department of Medicine in the newly-expanded, poorly-financed school spelled out to many in academic circles the type of school that would be established in Winston-Salem. An outstanding pathologist in an outstanding university said to me, "Now for the first time I know you are going to have a first-class medical school because you will have Tinsley Harrison there." The early acceptance of the school as first rate by many outstanding men in academic medicine was Tinsley's first great contribution to the Bowman Gray School of Medicine.

Thoughts and Modus Operandi

There was full agreement between Dr. Harrison and the administration concerning the policy of attempting to recruit a full-time salaried faculty and a volunteer faculty. Of this he had to say "I believe very strongly, and the opinion becomes reinforced every year, that neither the ivory tower, full-time salaried teacher alone, nor the volunteer teacher alone, can do as good a job as the combination, and I have never been disappointed when one of my stars, such as John Williams, went into practice, because I sort of think the object of a medical school is to train good doctors. As a side issue, if a man wants to be an academician, that's fine. I always encouraged it if he wanted it. But if a man wanted to go into practice and felt that I would feel he was throwing me down, I would have quickly disabused his mind and said I only have one request of you, I owe you so much and you have done so much for me, and I would say, you owe me only one thing; I don't care whether you go into surgery, obstetrics or internal medicine or what, but do it better than anybody else. That's a feeling I still have, that my boys must do it better than anybody else and they may have to decide what they do, but if they don't do it better than anybody else, then I've fallen down as a teacher."

Prior to Dr. Harrison's appointment it had been decided to utilize for teaching all patients in the Baptist Hospital (private as well as service) and certain patients from the Private Diagnostic Clinic, which was in the process of formation. The Clinic was to provide a facility for the referral of private patients to the medical center and at the same time provide income for the support of the geographic full-time clinical faculty. When asked about this in Birmingham, Dr. Harrison stated that in his observations of medical schools having such a facility, there were often years of antagonism between the medical profession and the medical school. He further stated "that in many instances both parties are at fault, snobbery on the part of the academicians and jealousy on the part of the practicing physicians. I did not care to be any part of anything that might create antagonism towards the school. So although I would have been far better off financially had I joined this [the Clinic], I decided . . . not to see any private patients except at the request of a physician, in the physician's office or in the hospital whether in Winston-Salem or somewhere else. I'd accept a consultation fee but I would not give continuing care. The indigent patients were my patients and I was happy with the decision and I never regretted it, because I do not think I made a single enemy for the school during the years I was there." In his time at Bowman Gray, he held strictly to these principles.

In the first year of the expanding school in Winston-Salem instruction was confined to freshman and sophomore students. With attention directed primarily toward students in the second-year class, he had this to say, "In those days I really had a lot of energy and I would suspect that five days a week I would teach an average of close to five or six hours a day, which I loved doing. The department was so small, it wasn't much of a problem and administration didn't take much time and I never liked it anyhow. Of course the teaching was all with patients, so patient care and teaching were the same thing. Then I'd get in two or three hours a day myself in research then perhaps — on every Saturday morning, and Sunday morning — I'd be there in the laboratory and I guess a third of the nights after supper I'd return. I always had breakfast and dinner with my wife and children. That was a rule unless some patient was gravely, gravely ill; I always saw them during that period. But most of the evenings I'd be back down to the laboratory and — I don't believe that a 40 hour week is compatible with being a member of a profession. A 40 hour week is for a man who has a dull job, repetitive, an assembly line sort of stuff, or heavy labor and that's ample, because this man derives no satisfaction from his work, he has to get his satisfaction during his leisure time. But for a person to consider himself a professional, which means your client, or your patient, or a member of your congregation, or your pupil — they come first, I come second. That's what a professional person is. Now a business man or a member of a labor union, there's nothing wrong with it at all, but it's I come first, other people come second. And I have no objection to this because this incentive on the part of businessmen is what has made this country so wealthy, but on the other hand, I have never considered business a profession — medicine a business, and I certainly don't think that it's a union. In that respect I have some difference of opinion, say, from other people."

Tinsley strongly believed that teaching and patient care were inseparable. Of his teaching in the early days of the school he said "teaching was all with patients, so patient care and teaching were the same thing." Of the second-year class he said "personally I taught that class most of what they were taught about taking histories and examining patients and I would always show them patients. I don't like lectures — I believe in clinical demonstrations and all of my teaching centered around patients. In the meantime I would invite every couple of weeks a half dozen or more out to dinner and then I got to know that class very, very intimately and some of the friendships are still very strong."

A stimulating exercise in which he was the "star" was the Monday night CPC. When he was present, and he usually was, medical students, house officers and regional physicians from a radius of a hundred miles filled all seats and packed the aisles. Almost without exception, the CPC was regarded as the most stimulating and informative educational exercise conducted at the medical center. In my Birmingham interview I said to Dr. Harrison, "the CPC is a great educational exercise but education does not reach its highest point unless you have a person leading it who can keep the audience awake, keep them stimulated, essentially a great teacher who is a great actor and of course you are a great teacher as well as a great actor." To this he replied, "Well, Moose, I think that there are two different kinds of teaching — and you are quite right. In order to keep an audience excited, a large audience, you have to have a bit of charlatan in you. I guess I had that and I was able to keep the audience interested, awake anyhow. But I don't regard that type of teaching as anything like as important as going quietly to the bedside of a patient with a half dozen or dozen people standing around, pupils — I use the word pupils rather than students because pupils includes house staff — and letting them see how you go about talking with that patient and how you handle the patient, not only from the standpoint of treating his disease but treating the patient that has the disease. That's what's getting worse all the time in medicine." In talking to Tinsley about one of the CPCs I once used the word "case." He immediately interrupted me and said "I don't like the word 'case' except when applied to a case of beer or a case of bourbon. A sick person is a patient. I have cursed out hundreds of my pupils for using the word 'case,' I'm cursing you out right now."

Specific space for research had not been provided the clinical departments in the original basic science building. It was the plan of the administration to assign laboratory space in this facility according to need. To my knowledge the only clinical department with significant laboratory research underway, and funds to support it, was the Department of Medicine. This was long before the extensive grant support programs of NIH, the American Heart and American Cancer Societies had been initiated. When asked about his initial support for research at Bowman Gray Dr. Harrison replied "I'd gotten from some of the smaller foundations grants and I transferred those grants with me when I moved. I went to New York and talked to the people who supplied the money and explained what I was doing and they said you'll be too busy organizing a department and all of that to keep on with research and I said, you don't know me, I'm not going to quit research and I didn't until after my coronary many years later." During his stay in Winston-Salem his research centered around the question of whether people following a heart attack or myocardial infarction, weren't being kept in bed too long. This work resulted in one of the first papers published indicating that there could be some rather serious effects of excessive restriction of activity. Other papers reporting experimental results were concerned with the danger of the routine use of quinidine in people with myocardial infarction and also an extensive series of experimental investigations dealing with hypertension.

Resignation

When I first learned that Dr. Harrison was considering the deanship at Southwestern Medical School in Dallas, I was distressed and said "Tinsley, shortly after your arrival in Winston-Salem you told me that Winston-Salem was the greatest community you'd ever lived in and that you expected to spend the rest of your life at the Bowman Gray School of Medicine. You have brought to the school recognition in internal medicine. During your stay here you have become recognized by the great majority of students as the most stimulating and informative teacher they have ever had. In research you have been a stimulus to medical students, house officers and many of the faculty. You have warned me and others against teachers who are so 'interested' in the mechanism of the idea that they have lost the idea itself. In research you have warned us against those who are always building 'boxes,' getting ready for research but are using the boxes as an excuse for never having gotten started. Further, I know that you dislike administration and I have discussed with you many times the tragedy of taking exceptionally good teachers of medicine, researchers and scholars and 'rewarding' them with administrative positions. What then are the circumstances that are leading you to leave Winston-Salem?" Asked this again in Birmingham he replied that although there were other reasons which were personal, he believed that "the most important consideration was the feeling that I had already had experience by then with the development of two new medical schools, or the rebirth, and there was a school ready to be reborn in Dallas. The war was on and I felt that I could contribute more by utilizing experience that I had had — I had the third there and the fourth here in Birmingham when I came in '50." He further stated "Winston-Salem to me is the greatest community I've ever lived in. I'd pick Winston-Salem number one and North Carolina number one as a state in which to live."

Reference

1. Carpenter C: The Story of Medicine at Wake Forest University. Chapel Hill, The University of North Carolina Press, 1970, p. 45.

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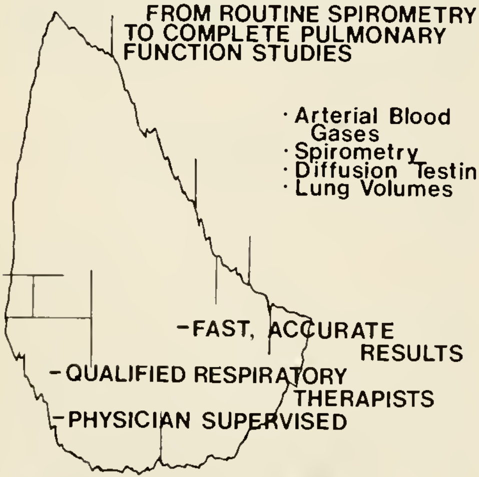

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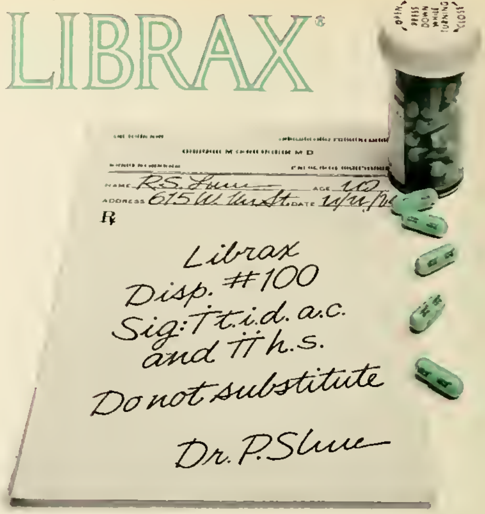

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LEARNING WITHOUT WORK

Muscle Pains Like You Have Never Seen!

John R. Feussner, M.D.

THIS brief report could be titled "Something we haven't seen before." Every so often what initially appears to be a simple musculoskeletal complaint becomes an unusual, perplexing or urgent medical problem.

A 53-year-old man reported to the clinic with a one-hour history of "tightness" and "swelling" in the left thigh which "resembles a tight muscle." His leg tightness began as he walked back to work after lunch. Over the ensuing hour he noticed progressive muscle pain and tightness and eventually was unable to fully extend or flex his left leg at the knee. He was otherwise healthy with no medical problems, and he took no medications regularly. He had a sedentary job and had sustained no trauma to his leg. He had no regular exercise program and had not engaged in vigorous exercise recently. There was no history of claudication, muscle cramps or weakness, or thrombophlebitis.

The patient kept his left knee in mild flexion and efforts to extend the knee were painful. The knee could not be flexed beyond 60°. The distal quadriceps muscle was rock-hard and the heads of the vasti medialis, lateralis, and the rectus femoris were readily discernible. The circumference of the left thigh was 60 cm, measured at a point 20 cm above the patella, and the right thigh was 61 cm. The distal quadriceps appeared to have increased bulk despite the bilaterally comparable circumferences. Sensation to light touch and pin-prick was normal over the entire left leg. The skin was not discolored and capillary filling at the nailbeds was rapid. The dorsalis pedis, posterior tibial, popliteal, and femoral arteries were normal. There were no femoral bruits, and no popliteal aneurysms or pseudocysts were palpable. There were no bruises or other signs of trauma, no edema, and no venous engorgement. Radiographs were obtained of the left hip, femur, and knee. All were normal. A complete blood count, platelet count, prothrombin time, partial thromboplastin time, serum electrolytes and calcium were all normal. The patient was given diazepam but there was no relaxation of the quadriceps muscle during the next hour.

At this juncture an orthopedic surgeon was consulted. After confirming the previous findings, he took direct manometric readings from the left and right quadriceps muscle using the Whiteside method; they were 50 mm Hg and 10 mm Hg, respectively. A left femoral nerve block relieved the patient's pain and improved flexion at the knee from about 60° to 100°. However, the quadriceps muscle remained tense and the compartment pressure unchanged. The patient was thought to have an anterior thigh compartment syndrome and was taken to the operating room for open fasciotomy. An approximately 12 cm long incision was made over the lateral thigh and the fascia was opened with scissors approximately 12 cm proximally and 5 cm distally. Immediately, the muscle bulged through the split fascia and tightness in the compartment decreased. A similar procedure was performed upon the medial distal thigh where an approximately 30 cm long incision was made over the vastis intermedius. The compartment pressure, measured after the fasciotomy, was reduced to about 20 mm Hg. The patient's postoperative course was uneventful. He was ambulatory on the seventh postoperative day and remains well after 6 weeks' followup.

Discussion

Our patient appeared to have a muscle cramp of the distal quadriceps resulting in severe pain and difficulty walking. Precipitating causes were not apparent. On examination, there was no evidence of vascular compromise, neither arterial ischemia nor venous insufficiency, and no peripheral neuropathy or metabolic abnormalities. We had a patient in severe pain with an unremitting course and no clues concerning a possible diagnosis or treatment plan. Consultation with the orthopedic surgeon resulted in the measurement of compartment pressures in the left and right anterior thigh. The markedly different pressures in the normal and affected leg led to the diagnosis of an anterior thigh compartment syndrome. However, the existence of such a syndrome is not mentioned in the standard surgical and orthopedic textbooks. We apparently observed a "new" syndrome not previously described.

Compartment syndromes have common precipitating factors and treatment options. The commonly described compartment syndrome of the lower extremity is in the anterior tibial compartment. The probable causes of this syndrome, at least in otherwise healthy persons, are edema and small hemorrhages in the muscle resulting from unaccustomed or strenuous physical exercise. As the tense and swollen muscle occupies more space in a confined compartment, vascular compromise, muscle necrosis, and nerve damage may ensue. Therefore, a compartment syndrome is a surgical emergency. Fasciotomy should be performed within 24-36 hours after the onset of symptoms. Early decompression results in a good prognosis with restoration of normal function. In our patient, immediately

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From the Ambulatory Care Service, VA Medical Center, Duke University Medical Center, Durham, NC 27705.

after fasciotomy, the muscle bulged through the incision, the quadriceps muscle relaxed, and the compartment pressure fell.

In summary, our patient presented with a rock-hard distal quadriceps muscle. He had progressive pain and difficulty with walking. Direct pressure measurements in the distal thigh suggested the presence of a compartment syndrome and timely surgical intervention led to resolution of the patient's symptoms. The surgeon called this an anterior thigh compartment syndrome. To our knowledge, this syndrome has not been reported previously. I'll bet this is a muscle pain like you have never seen!

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PRECAUTIONS: Use with caution in patients with a history of bronchial asthma, increased intraocular pressure, hyperthyroidism, cardiovascular disease, hypertension, hiatal hernia with reflux esophagitis, intestinal atony of the elderly or debilitated intestinal obstruction, myasthenia gravis, renal function impairment, and ulcerative colitis (severe).

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THINGS MOST OF US DON'T KNOW

The Anesthesia Story

Eugene A. Stead, Jr., M.D.

THE Classics of Medicine Library has published *The Origins of Anesthesia* by Sherwin B. Nuland. This is a fascinating study of personalities. I learned the following facts.

The term *anesthesia* was used in 1838 by George Sigmond and in 1843 by John Elliotson. In 1824 Henry Hill Hickman wrote a paper entitled "A Letter on Suspended Animation Containing Experiments Showing That It May Be Safely Employed on Animals, With A View Of Ascertaining Its Probable Utility In Surgical Operations Of The Human Subject." He produced a controlled narcosis by the inhalation of CO_2 gas. The learned men of his day in England and France ignored his findings. He was broken in spirit and died two days after rejection of his findings by the Academie Royale de Medicine.

In 1846 William Morton, a dentist, anesthesized a patient for the surgeon John Collins Warren. This event was the culmination of interactions between Horace Wells, another dentist, Charles T. Jackson, a chemist, and Morton. These three, from that day until their deaths, were more interested in making money than in serving people. They reaped little money and much pain.

The behavior of Morton, Jackson, and Wells was in sharp contrast to that of Crawford Long, a practicing doctor in Jefferson, Georgia. He had used ether for surgical anesthesia in 1842 but did not publish his experiences until 1849. He was the only one of the four persons establishing the use of anesthesia who was not destroyed by involvement in the dispute for priority. He behaved in the best traditions of our profession.

William H. Welch put the priority problem in perspective as follows:

> Long is necessarily deprived of the larger honor which would have been his had he not delayed publication of experiments with ether until several years after the universal acceptance of general anesthesia. . . . We need not withhold from Dr. Long the credit of independent and prior experiment and discovery, but we cannot assign to him any influence upon the historical development of our knowledge of surgical anesthesia or any share in its introduction to the world at large.[1]

Reference

1. Welch WH. Boston Med J 159:599, 1908.

Yes, I Will Love DRGs, I *Will* Love DRGs

John H. Felts, M.D.

The president of our North Carolina Medical Society has recently urged us not to be too adversarial about DRGs.[1] Although the whole business seems like a Galenic excursion to me, a retreat into medieval medical scholasticism, I will not be adversarial about the matter but am compelled to offer some observations about our medical past brought on by brooding about the present.

Many years ago Bloomfield,[2,3] fearful that our accelerating plunge into technology would result in the annihilation of our medical past, offered succeeding generations a guide to the historical record. His bibliographies,[2,3] in which he abstracted the most important papers of Western medicine to the mid-20th Century, offer a fine text for the study of the evolution of our craft, particularly of the remarkable powers of human observation applied without the saving graces of machines and standard deviations. For those stimulated by such an aperitif to explore further, any edition of Osler's *The Principles and Practice of Medicine* will do both for precise, lucid clinical descriptions and for commentaries on the times. Here is Osler[4] in his 7th Edition (1910) on the prophylaxis of syphilis.

> Irregular intercourse has existed from the beginning of recorded history, and unless man's nature wholly changes — and of this we can have no hope — will continue. Resisting all attempts at solution, the social evil remains the great blot upon our civilization, and inextricably blended with it is the question of the prevention of syphilis. Two measures are available — the one personal, the other administrative.
>
> Personal purity is the prophylaxis which we, as physicians, are especially bound to advocate. Continence may be a hard condition (to some harder than to others), but it can be borne, and it is our duty to urge this lesson upon young and old who seek our advice in matters sexual. Certainly it is better, as St. Paul says, to marry than to burn, but if the former is not feasible there are other altars than those of Venus upon which a young man may light

---

From the Department of Medicine, Bowman Gray School of Medicine, Winston-Salem 27103.

fires. He may practice at least two of the five means by which, as the physician Rondibilis counselled Panurge, carnal concupiscence may be cooled and quelled — hard work of body and hard work of mind. Idleness is the mother of lechery; and a young man will find that absorption in any pursuit will do much to cool passions which, though natural and proper, can not in the exigencies of our civilization always obtain natural and proper gratification.

Then if enticed to brave more ancient frontiers, let the reader seek out Major's collection of *Classic Descriptions of Disease*[5] for occasional reading. Then if he be perplexed as to how medicine escaped from the grasp of Galenic tradition, he can consider William Harvey's *De Motu Cordis*,[6] the first great modern physiologic treatise, and again appreciate what can happen when curiosity, skepticism and intelligence meet on fair ground. These writings tell us that it was during the 17th Century, Harvey's time, that man began to see himself differently in Western Europe, not as a pawn of the stars, not as a tool of dynastic monarchs, but as someone able to see nature bare, so that her secrets could be sought after. Each life could become an odyssey because each person was different.

It did take some time for these views to transform medicine, partly because a different definition of death was necessary. When it came, medicine truly entered its modern phase because it brought respect for controlled observations, recognition that there were demonstrable natural causes for effects, that actions had consequences. This part of the story is fascinatingly told by Michel Foucault in his masterful *The Birth of the Clinic*,[7] unfortunately laboriously translated so that the casual reader may sometimes despair at making anything worthwhile out of it.

Medicine is rather like decoupage, built up by applying layer after layer of data as varnish. The effect is pleasing if the design being treated is one that can be tested adequately by the senses. Historically until recently the layers have been made up mostly of clinical observations as they still are in the primary care fields and in clinical pharmacology. Each individual is a new experiment of nature, never to be repeated. But each individual is similar and thus comparable so that once it was recognized that death was determined by life, not by celestial whim, the natural histories of diseases could be recognized, described and confirmed. And this is of course what we do when we test drugs, when we react to the new and to the old in our environment and when we write our histories and case summaries. Our data storage system (once called memory) contrasts earlier clinical adventures, discards what seems irrelevant and sometimes lapses into brief episodes of benign senescent forgetfulness. But our earlier cases are bound more firmly to the receptors in our minds so the broader our early exposure, the greater possibilities for effective synthesis.

So the medical biographies of sick patients are not all numerical data, radiographic reports or surgical additions or subtractions. Sometimes questions don't really get answered, merely deferred when a patient feels better and terminates a diagnostic or therapeutic encounter. What do we do with all the knowledge we have accumulated? What are we to do with our floppy discs and chips loaded with the artefacts of poliomyelitis, malaria, syphilis, the one case of leprosy seen? We can at least understand what happened to those processes. But how to explain the 14-year-old boy with acute renal tubular acidosis, at least acutely manifested, with spina bifida occulta and a history of surgery for a thyroglossal duct cyst and for hypertrophic pyloric stenosis? What went on in utero? Or the mother and son, each deaf, with ear pits, and bronchial cleft cysts?[8] Will the son have a parathyroid adenoma in middle-age as his mother did? And was her parathyroid tumor related to bronchial cleft defects? Was a derepression determined in utero which foreordained the adenoma while faulty resolution of embryonic structures was going on all around? What of the woman with the Klippel-Feil syndrome, hyperparathyroidism, essential hypertension and a floppy mitral valve? Why do people eat clay, starch or Rinso?[9] Why DRGs?

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The Education of an Editor

Eugene A. Stead, Jr., M.D.

I knew that I had seen within the last six weeks a paper describing what to do when the numerator is zero. The librarian entered the word "numerator" into her computer and the system gave no response. When "zero" was entered, the correct reference was printed out. The entire transaction took three minutes. We need a manuscript on the modern medical library.

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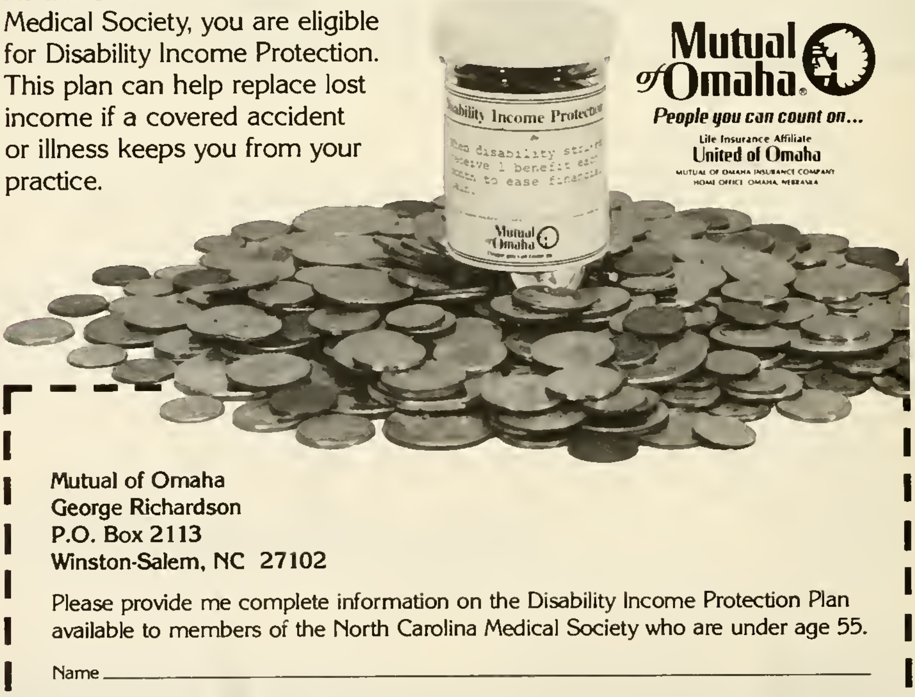

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IN STATE

January 1984
"Advanced Seminar for Certification in Administrative Psychiatry"
Place: Chapel Hill
Credit: 32 hours
Info: Malinda Marsh, Department of Community Psychiatry, UNC School of Medicine, Wing D, 208H, Chapel Hill 27514. 919/966-5277

January 8-11
"Advanced Clinical Teaching Skills"
Place: Rougemont
Credit: 20 hours, Category I AMA
Info: Dr. Katharine Munning, 407 Crutchfield Street, Durham 27705. 919/471-2571

January 14, 21, 28
"Cardiac Arrhythmias: Mechanisms, Diagnosis & Management"
Place: Chapel Hill
Info: Leonard S. Gettes, M.D., 353 Burnett-Womack Bldg. 229H, UNC School of Medicine, Chapel Hill 27514. 919/966-5203

January 18-20
"Alcoholism: The Search for the Sources"
Place: Charlotte
Fee: $50
Info: John A. Ewing, M.D., Medical School Wing B. 207H, Chapel Hill 27514. 919/966-4551

January 26
"Records and Other Necessities"
Place: Wilmington
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh 27611. 919/828-9334

February 3-4
"Live from Duke — Pediatrics 1984"
Place: Durham
Credit: 11.5 hours, Category I AMA; PREP
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham 27710. 919/684-6485

February 6
"Records and Other Necessities"
Place: New Bern
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh 27611. 919/828-9334

February 17-18
"Clinical Teaching"
Place: Chapel Hill
Fee: $275.00
Credit: 12
Info: Ms. Ruth De Bliek, ORDEHP, UNC School of Medicine, 322 MacNider Bldg. 202H, Chapel Hill 27514. 919/966-3641

February 19-22
"Beyond Advanced Clinical Teaching Skills"
Place: Rougemont
Credit: 20 hours Category I AMA
Info: Dr. Katharine Munning, 407 Crutchfield Street, Durham 27705. 919/471-2571

February 20-22
"Selected Topics for the Practicing Clinician"
Place: Durham
Credit: 24 hours Category I AMA
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham 27710. 919/684-6485

February 24-26
"NCSIM/NC-ACP Joint Meeting"
Place: Greenville
Info: Kathy Adams, North Carolina Medical Society, Box 27167, Raleigh 27611. 919/833-3836

March 1-3
"2nd Annual Diving Accident Symposium"
Place: Durham
Credit: AMA, AAFP, ACEP
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham 27710. 919/684-6485

March 7-10
"Internal Medicine: 1984"
Place: Chapel Hill
Credit: 25 hours AMA Category I
Fee: $250.00
Info: William B. Wood, M.D., 231 MacNider Bldg 202H, UNC School of Medicine, Chapel Hill 27514. 919/962-2118

March 15-16
"Eighth Annual Cancer Research Symposium"
Place: Chapel Hill
Credit: 11 hours AMA Category I
Info: Mrs. Mimi Minkoff, Cancer Research Center, UNC School of Medicine, Chapel Hill 27514. 919/966-3036

OUT OF STATE

February 5-11
"Winter Conference in Internal Medicine"
Place: Snowshoe, VA
Credit: 20 hours Category I AMA
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham 27710. 919/684-6485

February 12-17
"Postgraduate Course in Diagnostic Imaging"
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Fee: $475
Credit: 25 hours Category I AMA
Info: Donald R. Kirks, M.D., Box 3834, Duke University Medical Center, Durham 27710. 919/681-2711, ext. 286 or 287

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"Gold Coast Seminar: Surgery"
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In Memoriam

L. Everett Sawyer, M.D.

Dr. L. Everett Sawyer of Elizabeth City died September 9, 1983. Dr. Sawyer was born November 6, 1914 in South Mills, North Carolina. He obtained a B.A. from Duke University in 1935 and an M.D. from Duke in 1939. He completed an internship at the Union Memorial and served in the United States Army in 1941-1945, after which he returned to Duke where he was a Rockefeller Foundation fellow in medicine. He became a diplomate of the American Board of Internal Medicine in 1952. He also served as vice president of the North Carolina Society of Internal Medicine in 1976-1977.

Dr. Sawyer was one of the most respected and loved physicians in northeastern North Carolina. He always felt very deeply for his patients. He taught and exemplified what is best in American medicine. He never lost sight of the fact that the patient was a person with family as well as an individual with feelings and emotions. He never took care of a disease; it was always a patient with a problem. His loss will be sorely felt by patients and colleagues alike. Those of us here in northeastern North Carolina feel privileged to have served with and known Dr. Sawyer. Our deepest sympathy to his family.

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Letters to the Editor

About the *Journal*

To the Editor:

A brief note of appreciation, I think, is in order. Of late, the articles and the selection of articles has improved tremendously. In contrast to former years, I now read the *North Carolina Medical Journal* instead of relegating it to the circular file. Again, felicitations and please keep it up!

Austin T. Hyde, Jr., M.D.
312 South Ridgecrest Avenue
Rutherfordton 28139

To the Editor:

I think your ophthalmology issue was very handsome.

Ernest Craige, M.D.
338 Clinical Sciences Building
UNC School of Medicine
Chapel Hill 27514

To the Editor:

I thought that you would appreciate some feedback in regard to scientific articles in the *North Carolina Medical Journal*. Enclosed is a note from Dr. Colin Thomas of UNC [asking some questions about my article published in the May issue], which has stimulated communications between our universities. This feedback should be positive reinforcement for you (everybody needs some). Thank you for allowing me to publish in the *North Carolina Medical Journal*.

Warner Burch, M.D.
Box 3283
Duke University Medical Center
Durham 27710

To the Editor:

The last issue (October — eyes) was excellent.

Charles W. Styron, M.D.
615 St. Mary's Street
Raleigh 27605

To the Editor:

I still receive inquiries regarding my poison control article from the April 1983 *North Carolina Medical Journal*. Now I need another favor from you. You have probably heard about the large amount of money which the State Legislature has voted for the (Duke Poison Control) Center. One of the requirements to the grant was to inform the medical community in North Carolina as soon as possible of our toll-free number. Would it be possible to publish it in the *Journal*, stating also that we will continue to be available 24 hours 7 days a week? The number is 1-800-672-1697.

Shirley K. Osterhout, M.D.
Box 3007
Duke University Medical Center
Durham 27710

To the Editor:

I certainly do appreciate your becoming editor of the *North Carolina Medical Journal* and "turning it around." Before you took the helm I rapidly skimmed through the *Journal;* now for the past three issues I find myself reading the titles of each article, skimming over all, and reading various articles in detail. Thank you for bringing your expertise to the *Journal*.

W. Siegfried Smith, Jr., M.D.
104 West Northwood Street
Greensboro 27401

To W. Banks Anderson, Jr., M.D.:

I enjoyed reading your editorial in the October 1983 issue of the *North Carolina Medical Journal*. It is obvious that you had a good English teacher at some point. Your English is better than your tennis. Hereafter I may tend to ask your help with my speeches rather than on the tennis court.

W. G. Anlyan, M.D.
Box 3701
Duke University Medical Center
Durham 27710

To the Editor:

I thought that you all would be interested in the enclosed reprint request (from Hospital Central Portuguesa in Venezuela). The *Journal* is being read in at least some far-off places — even beyond Buxton!

William B. Blythe, M.D.
Old Clinic Building
UNC School of Medicine
Chapel Hill 27514

To the Editor:

Congratulations to you for an especially fine October 1983 issue of the *North Carolina Medical Journal*. I would like very much for as many of our patients as possible to see the patient section of this issue. Could you possibly spare 10 copies to put in our waiting room at the Eye Center?

M. Bruce Shields, M.D.
Duke University Eye Center
Durham 27710

About Uniform Donor Cards

To the Editor:

This letter is written as a commendation to all North Carolina licensed drivers who have generously signed a Uniform Donor Card when renewing their licenses. Our Human Tissue Donation Program has been reported a success through cooperative efforts with the North Carolina Division of Motor Vehicles. It is estimated that over 6500 drivers sign donor cards each month. Also, their driver's licenses identify them as donors.

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Claude A. Frazier, M.D.
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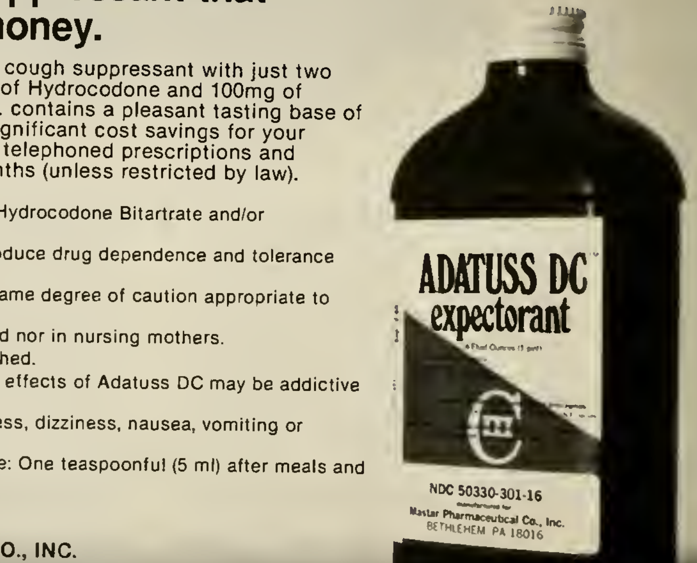

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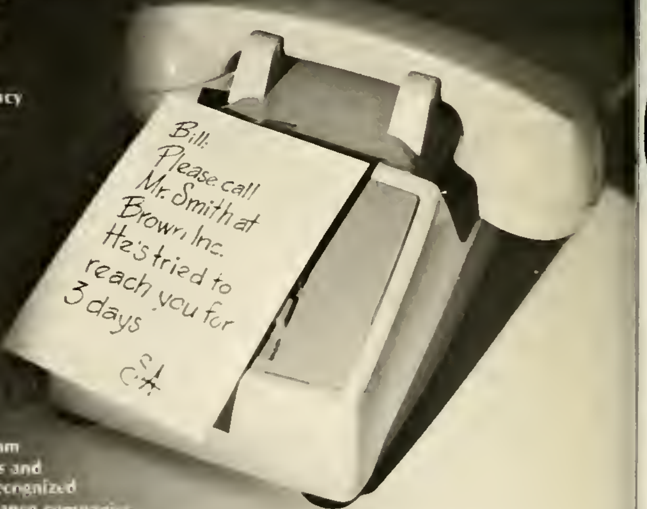

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The disease is often fatal.**

In many fatal illnesses signs and symptoms are obvious. However, in other illnesses, like alcoholism and dependency on other drugs of abuse, signs of impending death are often subtle. Today, more than ever before, people suffering from alcoholism/chemical dependency can choose to live instead of dying from this epidemic health problem. Woodhill, a division of Appalachian Hall, offers a complete and comprehensive 28-day program for the person who chooses treatment and recovery over the consequences of continued abuse of alcohol and/or drugs. Located in the beautiful mountains of Western North Carolina, Woodhill provides detoxification, individual and group psychotherapy, education groups, psychodrama, weekly family involvement and a therapeutic activities program. Integration into Alcoholics Anonymous, Narcotics Anonymous and Al-Anon along with a comprehensive 12 to 24 month aftercare program is also provided. The Woodhill treatment team works closely with Employee Assistance Program managers and supervisors. Appalachian Hall is JCAH accredited and is recognized by Blue Cross, Champus, Medicare, and other major insurance companies.

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A DRUG AND ALCOHOL TREATMENT CENTER
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The weight of objective evidence supports the clinical efficacy of

Dalmane® (IV)

flurazepam HCl/Roche

15-mg/30-mg capsules

- Studied extensively in the sleep laboratory—the most valid environment for measuring hypnotic efficacy.[1-12]
- Studied in over 200 clinical trials involving over 10,000 patients.[13]
- During long-term therapy, which is seldom required, periodic blood, kidney and liver function tests should be performed.
- Contraindicated in patients who are pregnant or hypersensitive to flurazepam.
- Caution patients about drinking alcohol, driving or operating hazardous machinery during therapy.

References: **1.** Kales A *et al: J Clin Pharmacol 17*:207-213, Apr 1977 and data on file, Hoffmann-La Roche Inc., Nutley, NJ. **2.** Kales A: Data on file, Hoffmann-La Roche Inc., Nutley, NJ. **3.** Zimmerman AM: *Curr Ther Res 13*:18-22, Jan 1971. **4.** Kales A *et al: JAMA 241*:1692-1695, Apr 20, 1979. **5.** Kales A, Scharf MB, Kales JD: *Science 201*:1039-1041, Sep 15, 1978. **6.** Kales A *et al: Clin Pharmacol Ther 19*:576-583, May 1976. **7.** Kales A, Kales JD: *Pharmacol Physicians 4*:1-6, Sep 1970. **8.** Frost JD Jr, DeLucchi MR: *J Am Geriatr Soc 27*:541-546, Dec 1979. **9.** Dement WC *et al: Behav Med 5*:25-31, Oct 1978. **10.** Vogel GW: Data on file, Hoffmann-La Roche Inc., Nutley, NJ. **11.** Karacan I, Williams RL, Smith JR: The sleep laboratory in the investigation of sleep and sleep disturbances. Scientific exhibit at the 124th annual meeting of the American Psychiatric Association, Washington, DC, May 3-7, 1971. **12.** Pollak CP, McGregor PA, Weitzman ED: The effects of flurazepam on daytime sleep after acute sleep-wake cycle reversal. Presented at the 15th annual meeting of the Association for Psychophysiological Study of Sleep, Edinburgh, Scotland, June 30-July 4, 1975. **13.** Data on file, Hoffmann-La Roche Inc., Nutley, NJ.

Dalmane® (IV)
(flurazepam HCl/Roche)

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Effective in all types of insomnia characterized by difficulty in falling asleep, frequent nocturnal awakenings and/or early morning awakening; in patients with recurring insomnia or poor sleeping habits; in acute or chronic medical situations requiring restful sleep. Objective sleep laboratory data have shown effectiveness for at least 28 consecutive nights of administration. Since insomnia is often transient and intermittent, prolonged administration is generally not necessary or recommended. Repeated therapy should only be undertaken with appropriate patient evaluation.

Contraindications: Known hypersensitivity to flurazepam HCl; pregnancy. Benzodiazepines may cause fetal damage when administered during pregnancy. Several studies suggest an increased risk of congenital malformations associated with benzodiazepine use during the first trimester. Warn patients of the potential risks to the fetus should the possibility of becoming pregnant exist while receiving flurazepam. Instruct patient to discontinue drug prior to becoming pregnant. Consider the possibility of pregnancy prior to instituting therapy.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. An additive effect may occur if alcohol is consumed the day following use for nighttime sedation. This potential may exist for several days following discontinuation. Caution against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). Potential impairment of performance of such activities may occur the day following ingestion. Not recommended for use in persons under 15 years of age. Though physical and psychological dependence have not been reported on recommended doses, abrupt discontinuation should be avoided with gradual tapering of dosage for those patients on medication for a prolonged period of time. Use caution in administering to addiction-prone individuals or those who might increase dosage.

Precautions: In elderly and debilitated patients, it is recommended that the dosage be limited to 15 mg to reduce risk of oversedation, dizziness, confusion and/or ataxia. Consider potential additive effects with other hypnotics or CNS depressants. Employ usual precautions in severely depressed patients, or in those with latent depression or suicidal tendencies, or in those with impaired renal or hepatic function.

Adverse Reactions: Dizziness, drowsiness, lightheadedness, staggering, ataxia and falling have occurred, particularly in elderly or debilitated patients. Severe sedation, lethargy, disorientation and coma, probably indicative of drug intolerance or overdosage, have been reported. Also reported: headache, heartburn, upset stomach, nausea, vomiting, diarrhea, constipation, GI pain, nervousness, talkativeness, apprehension, irritability, weakness, palpitations, chest pains, body and joint pains and GU complaints. There have also been rare occurrences of leukopenia, granulocytopenia, sweating, flushes, difficulty in focusing, blurred vision, burning eyes, faintness, hypotension, shortness of breath, pruritus, skin rash, dry mouth, bitter taste, excessive salivation, anorexia, euphoria, depression, slurred speech, confusion, restlessness, hallucinations, and elevated SGOT, SGPT, total and direct bilirubins, and alkaline phosphatase; and paradoxical reactions, *e.g.*, excitement, stimulation and hyperactivity.

Dosage: Individualize for maximum beneficial effect. *Adults:* 30 mg usual dosage; 15 mg may suffice in some patients. *Elderly or debilitated patients:* 15 mg recommended initially until response is determined.

Supplied: Capsules containing 15 mg or 30 mg flurazepam HCl.

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